American Cinematographer

THE MOTION PICTURE CAMERA MAGAZINE

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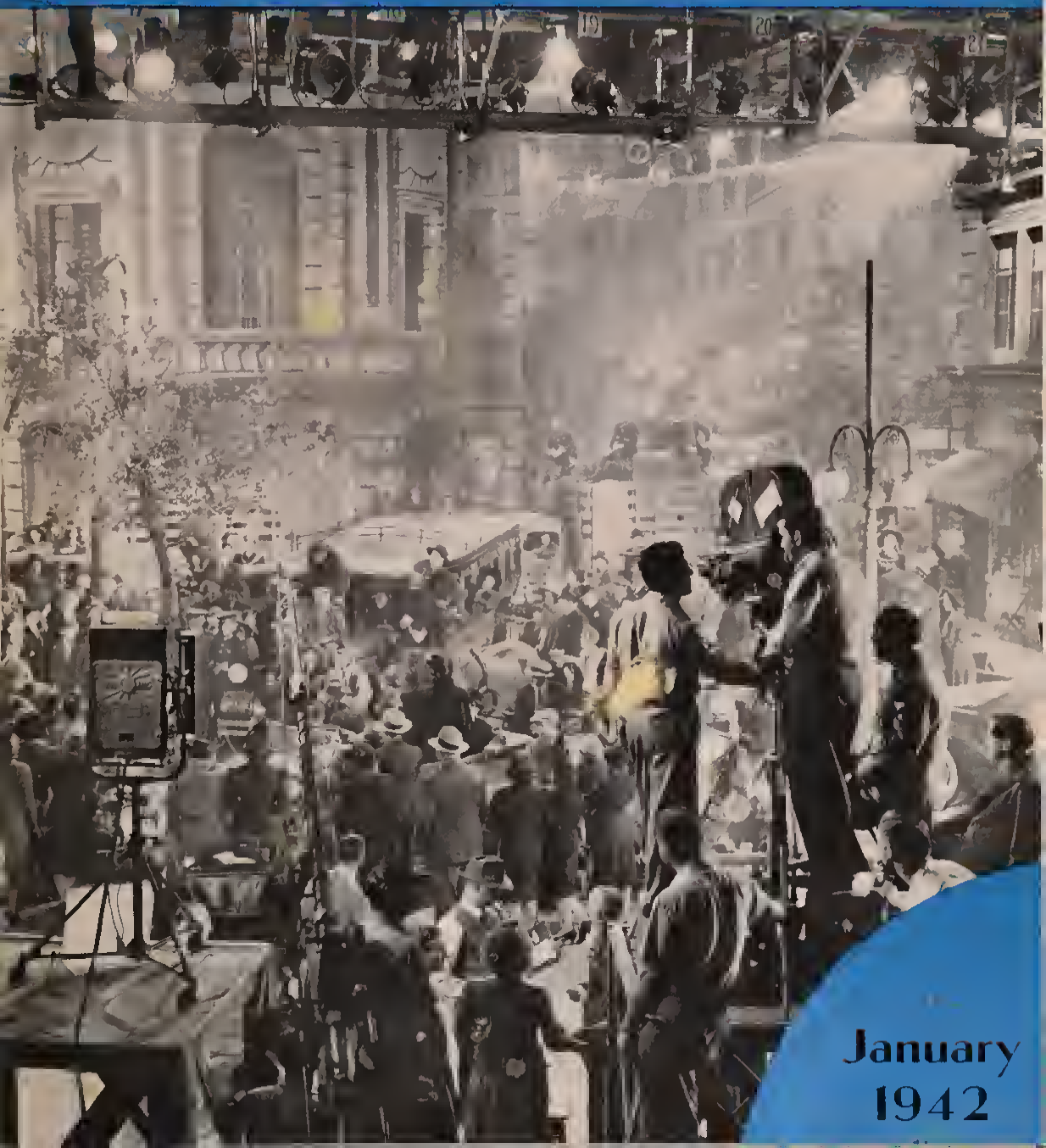

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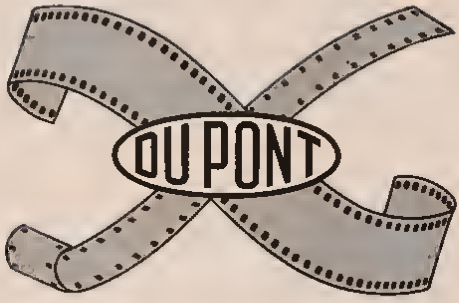

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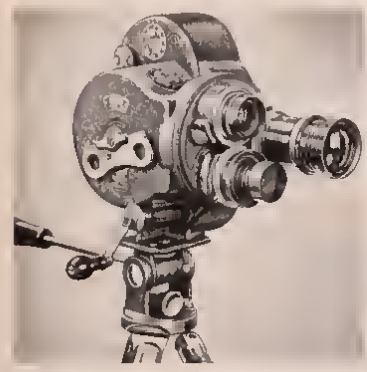

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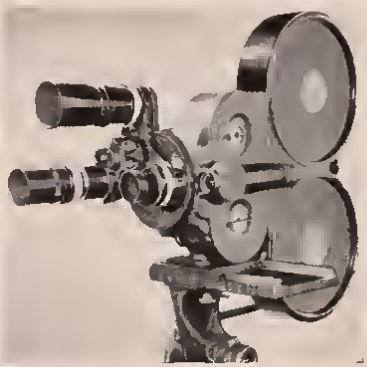

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THE MOTION PICTURE CAMERA MAGAZINE

VOL. 23 JANUARY, 1942 NO. 1

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The Front Cover

This month's cover shows Director of Photography Rudy Maté, A.S.C. (second from right on parallel) and Director Ernst Lubitsch filming a scene for Alexander Korda's "To Be Or Not To Be." The set—an exact replica of a square in Warsaw—was constructed indoors on a sound-stage. Still by Robert Coburn.

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Birthday Of The A.S.C.

By FRED W. JACKMAN

President, American Society of Cinematographers

THIS month marks the birthday of the A S C Twenty-three years ago, in 1919, a handful of cameramen formed an organization they called the American Society of Cinematographers. It was based very simply on an ideal a sincere conviction that cinematography was a great and dignified profession, and that not only the cinematographers themselves, but the industry, needed an organization of cinematographers, operated solely by cinematographers, for cinematographers Its purpose was not merely to set up economic standards for the men who had charge of photographing the industry's pictures, but to establish and maintain standards of professional and technical skill and integrity, and to bring into closer personal and professional fellowship all of the leaders of the motion picture camera profession in the same way the Medical Associations bring doctors together, and the Bar Association unites lawyers

During the twenty-three years since the A S C was founded, many changes have come to the industry, its people, and the conditions under which pictures are made The A.S.C. has kept pace with the industry, growing and changing to meet each new change of conditions Today, the American Society of Cinematographers is the oldest organized group of any sort within the motion picture industry, and one of the most respected. The original handful of members has grown to include every Director of Photography of recognized standing in the major studio world

But in one thing, it has not changed It is still dedicated to the same ideals of service to the camera profession and to the industry, to which its founders dedicated it twenty-three years ago Its activities, now as in 1919, have provided constantly-advancing standards for the economic and professional welfare of its members. Its record of service to the industry is unequalled. Collectively and individually, the A S C. and its members have participated actively in every phototechnical and artistic advancement the industry has made in more than two decades. A list of the basic patents on equipment and methods held by members of the A S C would embrace almost every phase of modern film technique, and would be impressively long It would become even more impressive if it could include the informal contributions freely made by the Society and its members to the evolution and refinement of commercially manufactured equipment and materials. There is hardly anything used today in the production of motion pictures which does not bear some trace of these contributions of the A S C

No other group has left a more imperishable imprint on the cinema and on the methods, materials and equipment through which cinematic entertainment is brought to the screen.

When the A S C. was founded, America was just emerging from a world war During these last twelve months, we have seen the Nation coming closer and closer to another and greater world war, and finally being forced into active participation. In this, too, the A S C and its members are playing their active part Many members have participated in the production of training films for our armed forces Others have given up profitable positions to put on the uniforms of the photographic sections of the Army and Navy Men who were in uniform twenty-five years ago are in uniform again, volunteering their skilled services to their country Yet others have given the products of their inventive brains to the development of military devices which cannot be described until the need for wartime secrecy is past Those who remain at home are contributing whole-heartedly to the industry's vital contribution to the War Effort—making better films to help uphold the morale of the Nation and its allies

So as the A.S.C reaches its twenty-third birthday, we can look back with satisfaction on twenty-three years during which the A S C has kept pace with the industry, and maintained its ideal of service to the camera profession and to the industry We face the future with a pledge that that ideal will continue to be the governing principle of the Society, and that, come what may, the A S C is big enough and mature enough to change with the changing times, keeping its place as a leader of the industry's progress END

American Society of Cinematographers

Los Angeles, California

The following are the Charter Members of the American Society of Cinematographers as incorporated under the Laws of the State of California, the eighth day of January, Nineteen Hundred and Nineteen

Philip E. Rosen — Charles E. Rosher
Homer A. Scott — Victor Milner
William C. Foster — Joe August
L. D. Clawson — Arthur Edeson
Eugene Gaudio — Fred LeRoy Granville
Walter L. Griffin — J. D. Jennings
Roy H. Klaffki — Robert S. Newhard
L. Guy Wilky

The original of this scroll commemorating the founding of the A S C hangs in the library of the A S C Clubhouse

TECHNICAL

Roofed-in sets and extreme focal depth were among the outstanding trends of 1941, as shown in this still from Citizen Kane

THE year 1941 might in many ways be chronicled as an "average" year in so far as technical progress in the motion picture industry is concerned. Certainly there have been no spectacularly sensational technical innovations to compare with the advent of sound, the coming of panchromatic film or the introduction of the first modern super-speed emulsions. Yet when one looks backward over the actual technical advances in methods, materials and equipment that can be recorded for the year, the conclusion cannot be escaped that 1941 was a genuinely fruitful year in cinematic technology.

Methods

Without doubt the most immediately noticeable trend in cinematographic methods during the year was the trend toward crisper definition and increased depth of field. Pioneered by Gregg Toland, A.S.C., in Orson Welles' "Citizen Kane," and extensively publicized as the "pan-focus" technique, this technique has been followed in other pictures by other cinematographers and studios. What is more significant, it appears to be a definite part of the trend, more extensively used both before and since the release of Toland's film, toward increased definition and realism, and strongly away from the softer style of photography popular a few years ago. It depends essentially upon minimized diffusion and the use of more strongly directional lighting and reduced lens-apertures—in some instances ranging from *f* 5.6 to as low as *f* 11 or *f* 16.

Of importance second only to this—and in the long run, of probably greater actual significance—has been the industry's increasing use of 16mm. Several major studios have made extensive use of silent 16mm., both black-and-white and Kodachrome, for pre-production tests, location-scouting, and the like in place of 35mm., especially in the instance of Technicolor productions, and found it productive of worthwhile savings of time, trouble and expense. In at least one instance, a major producer has successfully used 16mm. sound-tests as a means of selecting the leading players for an important production.

Three color-film laboratories—Technicolor, Cinecolor and Hollywood Color Film Co. (Gasparcolor)—have announced that they are commercially enlarging 16mm. Kodachrome to 35mm., three- and two-color film. The short-subjects department of one major studio (Warner Bros.) has produced several 16mm. short-subjects for 35mm. Technicolor release.

At the same time, the 16mm. nickel-in-the slot "soundies" so hopefully announced a year ago have lagged, due in part at least to difficulties in obtaining equipment and possibly to apathetic public response.

The Defense program has necessarily curtailed the manufacture of equipment of all types, both professional and amateur, as supplies of raw materials for civilian use have been restricted, and the specialized skill of the manufacturing plants has been redirected to the production of essential war materials.

The Defense program has born fruit in another field, however, with the industry's active participation in the production of training films for the Armed Services. With the greatest producers, directors, writers, cinematographers and technicians in the industry, and the studio facilities of the entire industry to call upon, a virtual revolution in the production of educational films has taken place which, in the opinion of educators who have viewed some of the many Army films already made, will advance the technique of educational films and visual education in general by twenty-five years.

In Russia, the Soviet inventor S. Ivanov announced the development of a system of steroscopic cinematography involving the use of a beam-splitting mirror system on camera and projector to produce and reproduce the essential binocular images, and a special wire grille in front of the screen to assure proper selectivity by the eyes of the audience.

Film—Professional

There was no innovation in the field of 35mm. negative emulsions. However, there was something of a trend on the part of several of the industry's leading cinematographers to make use of super-speed emulsions such as Super-XX on normal production interiors. In some instances, as in Toland's "pan-focus" technique, this was done to minimize the lighting problems incident to stopping down for extreme focal depth. In others, it was done because the cinematographer involved preferred the flatter gradational characteristics of these emulsions to the somewhat greater contrast of more "normal" emulsions. In the first case, full normal development was usually given, while in the latter case, developing-time was somewhat shortened in the interest of grain-quality. It seemed evident, however, that—especially when fine grain prints are used—the faster emulsion still does not give objectionably large grain.

Several laboratories changed over completely to the use of fine-grain positive emulsions for all printing, both daily and release, and to the use of fine-grain recording positive for recording and re-recording purposes.

Film—Amateur

There was very little change in the substandard emulsions. Agfa-Ansco, late in the year, introduced a double-run 8mm. reversal emulsion of unprecedented speed and surprisingly good quality, rated at Weston 100 to daylight, and Weston 64 to artificial light. The same firm also introduced a 16mm. recording stock of improved fine-grain quality and resolving power.

Color

Without doubt the outstanding development in this field was the announcement that 16mm. Kodachrome can now be successfully enlarged to 35mm. Technicolor. This development is almost certain to have a far-reaching influence on the production of theatrical short-subjects and independent features, as well as commercial and educational pictures.

The Gasparcolor process, well known in Europe for some years, finally reached the American market as a three-color and two-color printing method for both 35mm. and 16mm.

Cinecolor's three-color system appeared very near commercial utilization, and the firm actively entered the field of making two- and three-color enlargements from 16mm., and also the field of making 8mm. reduction prints in color from 35mm.

New kodachrome emulsions designed especially for duping, greatly improved

PROGRESS IN 1941

Increased use of 16mm for professional purposes, and the successful enlarging of 16mm Kodachrome to 35mm Technicolor were among the most significant developments of 1941

the quality possible in 16mm Kodachrome dupes.

In the still field, Eastman announced two services for making enlarged paper prints in color from Kodachrome originals. Trade-named respectively "Minicolor" (for enlarged prints from 35mm. originals) and "Kotavachrome" (from the larger-sized professional Kodachrome transparencies) these somewhat similar processes appear to make use of a special cellulose base coated with a monopack type of emulsion

35mm Professional Cameras

There were no startling innovations in the field of 35mm professional cameras, due probably in a large measure to the requirements of the Defense Program, which restricted raw materials and turned the output of the camera factories into other channels. The Twentieth Century Camera, evolved by Twentieth Century-Fox and manufactured by Cine-Simplex, went into manufacture, but in limited quantities, and it appears the commercial introduction of this camera will not take place until after the war's end.

16mm. Professional Cameras

The long-rumored Bell & Howell professional 16mm. camera finally made its bow as a remarkably excellent studio-type camera for the highest type of professional use. It was optionally equipped with a miniature of the famous Bell & Howell Type I registering pilot-pin movement, and every professional convenience. The further exploitation of this development, however, appears to be another that is sidetracked "for duration" by the War Effort.

16mm. and 8mm. Amateur Cameras

The same considerations which have slowed developments in the professional camera field have exercised a similar retarding influence on new developments in amateur cameras. However one new 16mm. camera — the Victor "Aircraft" model — appeared; substantially the time-proven Victor design with a greatly-improved governor mechanism. Several new double-run 8mm. cameras appeared, however. Among them are the Cine Perfex Magazine-type camera for use with the Eastman double-8 magazine-film, and the Univex "Cinemaster" Duo 8, designed for use with both Univex single-run 8mm. film and standard double-run 8mm. black-and-white and color film.

Lighting

The chief trends in lighting were two. One was toward an increased use of arc-lighting in monochrome cinematography, not only for illuminating the extremely large, stage built exterior sets which came increasingly into use, but also for more normal scenes, to bring out textural values and to permit the use of smaller apertures as demanded by the increased-depth technique.

The second trend was toward the use of properly-corrected incandescent lighting for Technicolor photography, making use of the greater compactness of the Mazda lighting units, and their ability to burn in virtually any position.

The use of smaller lighting-units, such as the "Dinky Inkie" and the Bardwell-McAlister "Single Broad" increased. Some cinematographers developed special lamps for mounting directly on their cameras for use in front-lighting close shots and follow-shots.

Lenses

The use of "coated" lenses met with a varied reception. Some studios turned definitely away from them. Others — notably 20th Century-Fox — turned as strongly toward them. The latter is equipping all their new cameras with coated lenses, and having existing lenses coated, as well. In addition to Bausch & Lomb, which is coating their new "Baltar" objectives, at least three firms are now coating existing lenses commercially. These are the Varo Mechanical Works, in California, the National Research Corp., in Boston, and the Photophone Division of RCA.

The Eastman Kodak Company announced a new lens for still camera work, known as the Kodak Ektar, the interior surfaces of which are coated, though the outer surfaces are not. The same firm also announced the development of a radically improved type of optical glass which, however, will not be available commercially "for duration."

Several studios and individuals have conducted investigations of the relative transmission capacities of lenses with the result that work is under way leading to improved methods of calibrating photographic objectives in a manner which will express the actual transmitting power of the lens involved, rather than an arbitrary mathematical formula.

Accessories—Professional

During the past year, the industry finally reached the point where its acceptance of the photoelectric light-meter might be said to be virtually 100% complete. This may be attributed in part to the increasing number of "production" cinematographers assigned to Technicolor features, thus coming in contact with the color firm's accurate use of meters, and to the development of advanced types of meters.

Clyde De Vinna, A.S.C., and Joseph Ruttenberg, A.S.C., developed a useful accessory by adapting the well-known S.V.E. "Picturol" 35mm. slide-film projector as a means of viewing light-tests on the set, by projected light.

Charles G. Clarke, A.S.C., at 20th Century-Fox, developed a very useful device by which a suitable photographic transparency is suspended in front of the lens and permits the insertion of actual clouds into an otherwise cloudless sky. Similar devices are being developed in several other studios.

At the Warner Brothers Studio, an unusually compact and flexible lighting control switchboard has been developed. Built in the form of a mobile control panel, the device incorporates several dimming rheostats of high and low capacity, together with the necessary ballast resistances, switches, indicating lights, etc., so that a large number of lights on a set may be separately controlled by a single operator, and dimmed either individually or together.

At the Samuel Goldwyn Studio, Gregg Toland, A.S.C., developed a method for dimming arc-lamps by controlling the

(Continued on Page 45)

Left: Fig. 7 filmed conventionally. Right, Fig. 8 filmed by IR System

Increasing Focal Depth With The IR System

By ALFRED N. GOLDSMITH

Past-President, Society of Motion Picture Engineers

IT is correctly axiomatic among optical experts that the depth of field of a lens is a function only of the focal length of the lens and its working or relative aperture (together with the permissible diameter of the "circle of confusion" forming the image of a point source). Thus, for a lens of any specific focal length and aperture or "speed") focused for a definite object distance, and for a given permissible size of the circle of confusion of the point image, the depth of field is readily calculable and is unchangeable by any known method.

This is a serious and inevitable limitation of all lens systems, and naturally has a profound influence on optical imagery in the motion picture field. Further, it influences and indeed controls the method of studio photography, script writing, separation of and relationship between various takes, editing, cutting, and the final effect of the produced picture.

It has required the cameraman as well as the writer, director, actor, and editor to accommodate themselves to the rigid framework of a cramping optical law. Sincere tribute must be paid to the effort and ingenuity of these workers in their attempt to circumvent or at least to minimize the difficulties of photography within these restrictions.

But, at best, an artificially limited presentation has resulted, including a number of conventions which have been accepted by the producers and the audience alike in the absence of anything better.

Sometimes, indeed, cameramen have resorted more or less in desperation to radical measures such as using extremely short-focus lenses stopped far down in order to secure somewhat increased depth of field. In so doing, they have inevitably introduced the exaggerated perspective and pictorial unnaturalness resulting from the use of such lenses, and have either over-illuminated the stage with resulting eyestrain and discomfort to the actors or have produced a contrasty, underexposed, "chalk and coal" picture or both.

On the other hand, the human eye has in effect a practically unlimited depth of field. The re-focusing of the eye for any desired object distance is so nearly instantaneous that the viewer is unaware that any part of the field of view is ever out of focus. Thus, in natural and real life, persons with normal sight are totally unaware of any limitation in the visual depth of field. Again, anyone who, in viewing a legitimate stage performance, found that he could see the people in the foreground sharply defined but that the people in the background were blurred or fuzzy, would at once and properly consult his oculist.

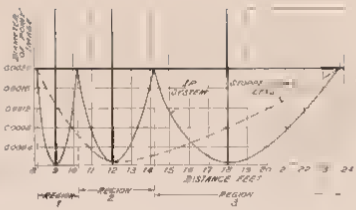
The follow focus adjustment is of course no solution of the problem since it applies only to one given object distance at any instant and does not in the least solve the major pictorial and dramatic problem of successfully depicting significant action occurring *simultaneously* at widely different distances from the camera.

It is necessary to stress here the preceding points since many studio workers have become so accustomed to present day practice that its limitations have come to be regarded as inevitable, natural, and inherently to be accepted. Indeed, present motion picture technic is fundamentally based on these optical limitations of the objective lens. Studio practice simply does its best within the limits of present-day optics. Some cameramen and a part of the audiences have become so accustomed to the present restrictions that they hardly realize the wealth of improvement which would be available were these restrictions to be removed. It does not occur to most people that the present abrupt succession of long, medium, and close-up shots necessarily results in large measure from the limitations of the lens. Present practice requires continually shifting the point of view, wearisomely accumulating many takes of each scene or action, painstakingly matching up successive takes, "covering up" in cutting and editing, delay and increased cost in production, unnaturalness in the acting and in the corresponding effect on the audiences, and a less economic and dramatic set-up than would otherwise be attainable.

The availability of increased depth of field would gradually bring about a marked revolutionary change in methods of production, greater flexibility, considerable economies, and simplifications in camera technic. To the audience, the pictures would more closely resemble legitimate-stage performances or even real life.

In view of the confusion which has existed in some quarters as to what constitutes a system for true increase in depth of field, it is deemed appropriate to list below the specifications and general characteristics of such a system. The following description then covers an acceptable method for adding to depth of field without optical or esthetic deterioration of the picture rather than a system which merely sacrifices important optical or pictorial qualities to secure an apparent increase in depth of field. The following are, however, admittedly strict specifications.

During the past year the problem of obtaining increased depth of field has received considerable attention. One of the latest and most interesting developments is the "Increased Range" system originated by Dr. Goldsmith and his associates and covered by U. S. Patents No. 2,244,687 and 11,688. We are proud to present herewith the inventor's description of the process as abstracted from a paper presented by him at the Fall 1941 Convention of the Society of Motion Picture Engineers. The paper in full appears in the January 1942 issue of the Journal of the S. M. P. E.



Left, Fig 1 principles of IR System Center Fig 2 comparison between depth in IR System and stopped-down lens Right Fig 3, lighting and definition regions in typical IR System set up

(*a*) The system shall be usable for either *black-and-white or color* pictures

(*b*) It shall be usable for *still-picture or motion-picture* photography

(*c*) It shall be usable for *photography or television* and the like

(*d*) The system shall enable using *standard lenses* of the highest degree of correction of optical aberrations then current in the art

(*e*) It shall enable using lenses of any *normal and usual focal lengths*.

(*f*) It shall enable the use of normal lenses at the *usual large apertures*.

(*g*) And above all, there shall be *no deterioration of picture quality* or sharpness as the result of the use of the system

(*h*) The *sharpness* of focus of objects in *any portion of the object space* shall be reasonably *controllable*. This condition, which is preferred but not mandatory, is met by the IR System.

(*i*) *No* extensive or unduly *cumbersome changes in camera* construction shall be necessary

(*j*) The *handling of the camera* and its finder shall be essentially *conventional;* and increased-range pictures shall be available in the finder to guide the cameraman as well

(*k*) It shall require *no more total light* on the actors than for ordinary photography.

(*l*) It shall enable the use of lighting to obtain any of the effects obtained by *conventional lighting* and photography

(*m*) Setting up the *lighting* of the set shall require little specialized optical knowledge, and shall be conveniently possible *by the usual experienced electricians.*

(*n*) It shall be flexibly *adaptable to* composite or *process shots* as well as to miniature work

(*o*) It shall preferably enable making a number of *simultaneous angle shots* from different viewpoints, with different types of lighting; and each of these shall have increased depth of field as required

While the above are extremely difficult specifications, they have been met by the newly developed IR System So far as is known, they have never previously been met; and there is reason to believe that no other method of meeting these specifications with conventional optical elements alone is possible.

In ordinary photography, each frame or picture represents a view from a uniquely focused lens of an entire and overall-illuminated object space In the IR System, each frame or picture represents the composite of a number of views made by a multiply focused lens, each of which views covers only a region or division of the object space so selected that the picture of such region is altogether in focus Thus the IR System includes the photography within a single exposure period (single frame) of the various adjoining regions of the object-space in such fashion that

(*a*) each region has an identifiable illumination, with minimized spillover of illumination of other types, and

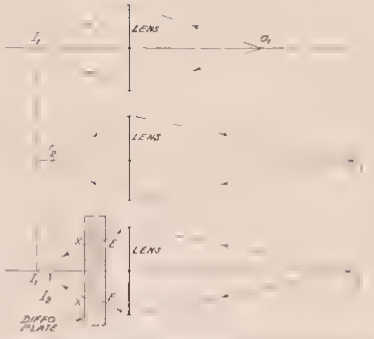
(*b*) the identifiable illumination from each region is first identified and in effect segregated, and, second, brought to the same focal plane as that from all other regions by means of a differential-focusing device.

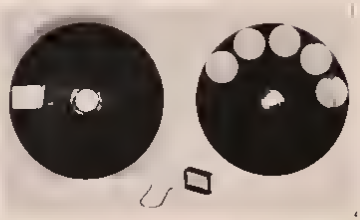
The identifiable regional illumination may be of the following types

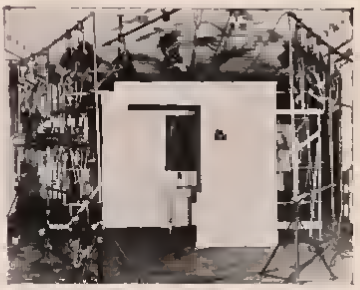
(*a*) It may be suitably polarized light This method is not recommended in general because of the non-retention of the plane of polarization of light on reflection from most surfaces.

(*b*) It may be appropriately colored light In this case, each region in the object space is illuminated by light occupying a different spectral range, thus enabling its later identification either by color filters or by the differential refraction (dispersion) of some refracting system The method amounts to establishing a selected color configuration (*e. g.*, a spectrum, broadly speaking) axially through the object space, and then introducing a compensating amount of longitudinal chromatic aberration into the objective lens system so that the colored light from each region is brought to the same focal plane and there correctly imaged

(*c*) It may be correctly timed illumination In this instance, the total time for each frame exposure is divided into a number of portions Each region in the object space, as defined below, is illuminated during a selected portion or portions of the total available exposure time *and is not illuminated at any other times during the exposure period* This last proviso is fundamentally novel, and is important in the realization of the method At the camera lens, a differential-focusing device is synchronized with the light coming from each corresponding region in such fashion that the light from each region is brought to the same focal plane The resulting picture therefore has increased depth of field since it consists in effect of the composite of a number of pictures each of which is inherently in focus, which pictures in their totality form a complete picture of the object space.







Above Fig 4 diagram of action of Diffo' plate beneath Fig 5 special aperture plate and 'Diffo' shutter used in IR cinematography bottom, Fig 6 experimental lighting set up, using synchronized shutters for IR System tests

This method amounts, in its simplest form, to sending a wave of illumination (in the form of an axially extensive and steadily deepening slab of illumination) in some systematic fashion through the object space, and pacing it by a synchronized wave, so to speak, of correlated focusing of the objective lens such that the light from all objects on the set is brought to the same focal plane It also amounts to a sort of three-dimensional luminous scanning of the set followed synchronously by the appropriately coordinated focusing of the lens

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Director of Photography John Mescall A.S.C., illustrates method of making the tests described. Gobos in front of camera are moved between takes and dimmer in foreground controls lighting brilliance

Coordinating Exposure-Meter and Processing For Effect-Lightings

By JOHN J. MESCALL, A.S.C.

THE various methods of using both the reflected-light and the incident-light types of photoelectric meters for key-light measurements and normal lightings have been so frequently discussed, in and out of print, that they are thoroughly familiar to most cinematographers. The technique of using meters as a guide to exposure values and lighting balance in effect lightings, however, has not received so much attention. Yet, to my mind, it is in this type of measurements that the meter can often be the most useful, for such lightings depend on delicate gradations of lighting and exposure which are often difficult to measure visually.

While it is probable that either an incident-light meter or a reflected-light meter could be used for measurements of this kind, my own experience has been solely with the reflected-light type—my Weston "Master," which I have found capable of furnishing a quick and accurate guide in making effect-lightings.

The first, and most essential step in using a meter for this type of work is to find an accurate basis by which the meter's readings may be coordinated with the processing given your negative by the laboratory individually involved. In my case, I have keyed my system to the negative development of the Paramount laboratory, as my last several pictures have been made at that studio. For some previous pictures, however, I employed the same basic system with negative processing done by the Consolidated laboratory, and of course the principal may be used, with suitable modifications, for film processed in any laboratory.

Every laboratory has what might be called a "pet" printing-light: a point, usually in the middle of the printing scale, at which they like to have their negative print. Most cinematographers, too, have similar favorite printer-settings which they feel will get the utmost from their negative. In the present instance, both the Paramount laboratory chiefs and I favored light 12, so I have keyed my meter and its use to that point.

The next step is to determine the range of illumination necessary to produce the full range of photographic densities from complete black to clear white with negative developed to the laboratory's normal standards and printed on that favored printer-setting.

It is a well known fact that, regardless of the intrinsic color of an object, we can, by varying the intensity of its illumination, make it appear on the screen in any tone we want, from black to white. A white object, with no light falling on it, will photograph black; a jet-black object, if sufficiently over lit, can be made to appear pure white.

For my test, I set up a fairly large sheet of neutral-gray cardboard (about three feet square) in front of the camera. At the top, running horizontally, I placed a strip of black velvet. At the bottom, also running horizontally, I placed a similar strip of white cardboard.

In front of the cardboard test-sheet I placed two flat black screens or "gobos," so that only a narrow, vertical strip of the cardboard was visible. During the test, I moved these so that, by rewinding the film in my camera between each exposure, I photographed successive parallel, vertical strips of the test-card.

Each of these strips received a different intensity of illumination, carefully measured by the meter, and with the meter's reading penciled in below the strip on the white panel. The ultimate result in the completed test was essentially that of a graduated gray-scale, produced by changes in illumination, instead of variations in the subject's actual tone.

The meter-readings were made with the meter about three inches from the subject, and with the hinged light-baffle over the photocell swung back, increasing the meter's sensitivity and bringing the low-intensity scale into place on the dial. In the successive takes of the test I varied the illumination (by means of dimmers) until virtually the whole of the low range scale had been covered.

The first test, for instance, was made with the light so dimmed that I got the meter's minimum reading of .2; the next two exposures were made with the meter's needle pointing respectively to the next two, unnumbered, blocks above .2; the third take was lit to a reading of .4 (the next numbered calibration), and so on until we had reached an illumination-reading of 50.

The negative was then put through Paramount's usual time-and-temperature development, and a print was made using printer-light 12.

The results on the screen showed me that at any light-value below a 1.6 reading, my subject would be rendered as black, regardless of its actual coloring. From that point on up to a brightness-reading of 25, I obtained a normal range of halftones. At readings of 25 and over, my subject—again regardless of actual color—would be rendered as white. With the actual black and actual white sections of the test subject, this region was naturally narrowed considerably. Differences in the gradational quality of each laboratory's negative processing will also compress or expand these limits somewhat.

Putting this data to work under practical conditions thereafter becomes a simple matter of taking separate brightness-readings as the nature of scene and lighting may indicate, and modifying the lighting accordingly. For example, suppose that in effect-lighting a set I want a chair to be silhouetted against the back-wall. I take a reading on the chair: if the meter indicates a brightness of 1.6 *or less*, I know that it will be rendered as black. I can then adjust my illumination of the wall behind the chair to whatever intensity will give me the tone I want there: if I want it pure white, to form a strong contrast, I know that a reading of 25 *or over* will give a clear white rendition. If I want a bare minimum of contrast between the chair and its background, but still preserving the silhouetted effect, I light the wall so that

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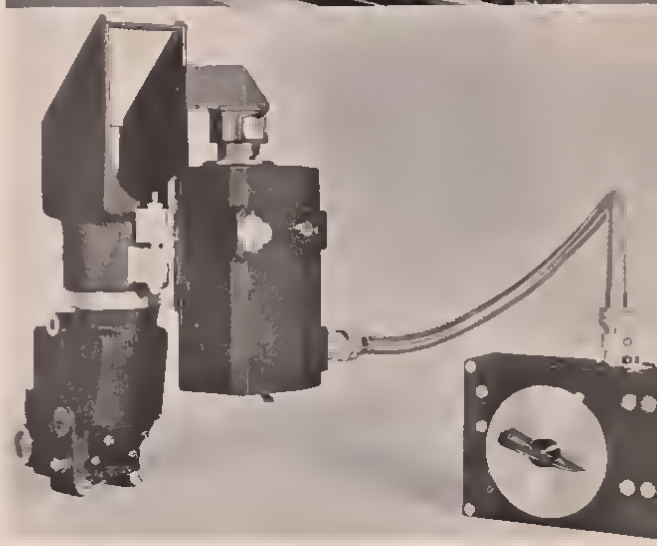
The Air Corps' Newest Camera Gun

By REED N. HAYTHORNE, A.S.C.

Washington Staff Correspondent



Above, leading the GSAP Camera middle, camera is fired by pressing trigger on plane's control—stick bottom, the GSAP Camera, with over run control device Official Photos U S Army Air Forces

HIGH above the clouds two tiny pursuit planes in combat maneuvers jockey for position. One pilot gets "on the tail" of the other plane, and plunges toward him with his trigger switch pressed hard There is no burst of fire, however—no airplane falling in flames The sequel to this exciting drama of the skies comes a few hours later, in an Air Corps class room

Here the instructor and the students view a movie, composed of machine-gun camera pictures, obtained when the trigger was pressed by the two pilots in their mock dogfight These are pictures which indicate whether the pilots would have scored hits on their adversaries, had they been using "live" ammunition instead of movie film

The use of gun-cameras for training pilots in aerial gunnery dates back to World War I, as does the actual use of machine-guns in aerial combat But just as the actual armament of heavy-caliber machine-guns and aerial cannon, now in use on our newest planes is far superior to the one or two hand-operated guns which armed planes of the first world war, so is the new training equipment far more efficient than the first gun-cameras

Today the Air Corps is putting into use its new gun-sight aiming point camera, the GSAP, so named because of its optical system, which shows in the finder not only the target of the gunner but also a picture of the sighting apparatus used, and records both of these on each frame of film taken In addition, the new equipment has an "over-run" device, which keeps the camera going after the pilot ceases "firing" for a predetermined time, to record what happens after he ceases to fire

Earlier gun-cameras were mounted on machine-gun mounts, necessitating removal of part of the armament, but today's cameras are fixed behind the gun-sights, so that the plane may carry its full complement of guns in addition to its recording device By this means the camera may be carried into actual combat, and worked simultaneously with the guns to provide a record of the combat Here again the overrun device is an advantage, for the pilot may follow an enemy plane down to its crash after it goes out of control, and the camera will continue taking pictures of it after he has ceased firing his guns.

The new air corps GSAP camera is electrically driven, equipped with a 50-foot film magazine using standard black-and-white 16mm. motion picture film The pilot may vary the speed of the camera from 16 to 64 frames a second by a reset knob The machine compensates for atmospheric conditions by aperture controls for bright, hazy, and dull weather, which are accessible in flight. But the film latitude is sufficient for the camera to produce satisfactory pictures if the setting is within the equivalent of a stop-and-a-half of the proper setting. Like most aerial cameras, the focus is at infinity, and the camera is equipped with a film-footage indicator.

The device is so designed that the optical system showing the gunsight in each frame may be replaced with a straight lens arrangement to get ordinary pictures without the gun-sight, if desired Also, provision is made to heat

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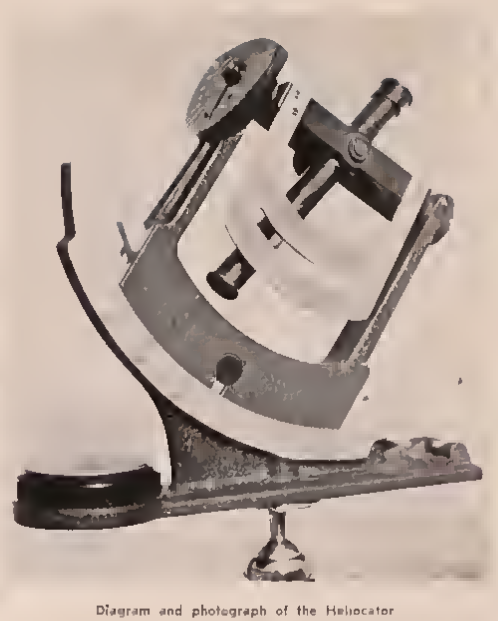


Diagram and photograph of the Heliocator

Determining The Sun's Angle For Any Location

By LEO KUTER

THE need for an instrument that would readily indicate the position of the Sun in the sky at any hour of any day of the year led to the design, construction and subsequent use of the "Heliocator," or Sun Pointer, herein described, at the Warner Brothers Studios, at Burbank, California

The photographing of exterior motion picture settings, or locations, during the day, is of course almost entirely dependent upon the astral presence of the Sun. It follows therefore that the various positions assumed by the Sun, in its movement across the sky, must be carefully considered in the design and orientation of such settings, and in the choice and selections of such locations

Settings and locations which involve the seasonal shadows of hills, mountains, canyon walls, huge trees or nearby high buildings, etc., may be found, upon the shooting date, to be in complete or partial shadow, if the directional or angular variations of the Sun have been merely guessed at, or completely ignored, as sometimes happens

In order to obtain the best photographic results, and to intelligently set up shooting schedules and accurately time company "calls," it is most necessary to have *advance knowledge during the planning period*, of just what the exact position of the Sun will be at all hours of the day, in relation to the set or location to be photographed upon any specific date required. This information the Heliocator gives easily and quickly, and a brief description of the instrument follows

It consists of a base into which is fixed a compass and a two-way spirit level, and having an upright, circular segment on which Degrees of Latitude are indicated. This is the *Latitude Quadrant*.

Arranged to slide upon this quadrant is an erect yoke, between the arms of which is set a rotating split shaft. Pivoted *in* this shaft and revolving *in a line with its axis* is a hollow tube, or pointer, whose movement is regulated by a small quadrant upon which are indicated the days of the year. This is the *Date Quadrant*

The split shaft is the *Daily Time Shaft* and, rotating on its axis, carries with it the Date Quadrant and the Tube Pointer. Fixed to the end of this time Shaft and also rotating with it across a dial fixed to the yoke, is the *Time Indicator Hand*.

The setting up and operating of the instrument is extremely simple

1st. The lower curved slide of the yoke is set and locked to the latitude of the observation on the Latitude Quadrant.

2nd. The indicator attached to the Tube Pointer is set and locked to the Date Quadrant at the date for which the observation is being made

3rd. The instrument is leveled and oriented with the compass needle pointing to the Compass Declination of the locale (Not at N or North on the compass, except when knowledge of this Declination is missing. More about this later.)

The Tube Pointer may now be revolved on the Time Axis, and will follow the Sun's path throughout the day. The observer follows this path by sighting through the Tube and the time any shadow will fall upon the position occupied by the instrument is found by reading the time on the Time Dial when any obstruction appears between the observer's eye and the open sky

This time, however, is *True Sun Time*, and except in a few comparatively rare locations and dates, will not vary from *Standard Time* by more than 30 to 40 minutes. The explanation and method of arriving at accurate Standard Time will be found later in this article

The principles upon which the instrument is designed are well known to anyone familiar with the operations of a marine sextant, or the equatorial mountings of a telescope, but are here reviewed for the benefit of those without that knowledge

As the Pointer must indicate the Sun's location at all times it must follow the two principal apparent motions of the Sun. These are

A. The daily East to West movement from sunrise to sunset due to the Earth's rotation on its axis, and.

B. The annual North and South travel

of the Sun due to the inclination of the Earth's axis to the plane of its orbit around the Sun.

The problem presented by "A" was solved by having the Pointer mounted to rotate around a Daily Time Shaft, whose axis can be adjusted to duplicate, or parallel, the axis of the Earth, and, since the angle of the Earth's axis with respect to the horizontal plane, or visual horizon, in any latitude varies with each location, (from being parallel, or zero, at the Equator to vertical, or 90 degrees, at the Poles,) a secondary adjustment was necessary to allow of the instruments use in all latitudes. This is the large lower, or Latitude Quadrant, in the base.

The problem of "B" was solved by allowing the pointer to rotate in a line with the Time Axis Shaft, controlling this movement by the Date Quadrant.

When viewed from the Equator, on the dates of either of the Equinoxes, March 20 or September 23, the Sun rises exactly on the East, sets exactly in the West and at noon is in the Zenith, or exactly overhead. Its pathway describes a true vertical arc, dividing equally the Northern from the Southern hemispheres.

But six months later, June 21 or December 21, the dates of the Summer and Winter Solstices, the Sun's apparent North and South movement has reached its limit and at noon, or meridian, of these days is 23½ degrees from the vertical. This is, of course, the angle of inclination of the Earth's axis from its orbital plane.

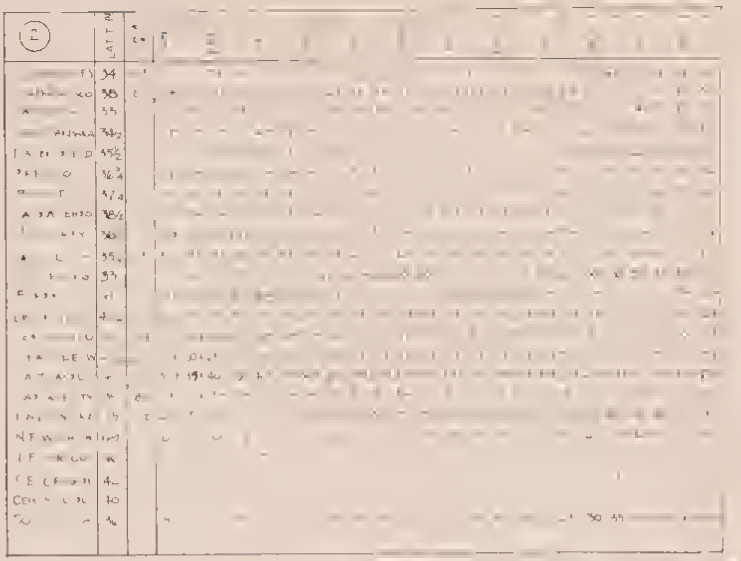
This angle of the Sun's declination both North and South from a line perpendicular to the Axis of the Earth is duplicated on the Date Quadrant of the Heliocator, with respect to the axis of the Daily Time Shaft.

The apparent speed of the Sun in this movement is not constant; faster at the Equinoxes, decreasing towards the Solstices until it ceases, turns back and with increasing speed again reaches the Equator. This variation of speed is of necessity taken into account and plotted on the Date Quadrant.

This yearly movement of the Sun with respect to the Earth's axis is true whether viewed from the Equator or from any other place on the Earth's surface, but its *appearance* varies in each latitude exactly as the angle between the visual horizon line and the Earth's axis varies. This variation is measured in Degrees of Latitude.

The Date Quadrant of the Heliocator, following this movement of the Sun, likewise cannot change in respect to the axis of the Daily time Shaft, but with the aid of the Latitude Quadrant, the angle of the Time Shaft can be changed with respect to the horizontal plane and the Pointer kept to the visual path of the Sun.

Reference was made previously to the Declination of the Compass. The direction of True North and Magnetic North from most localities is not the same, Magnetic North being either to the East or West of True North. The angular



difference between the two directions at any place is known as the Compass Declination for that place.

The Compass on the instrument is set with the indicated North in line with the Time Shaft, to set the shaft in a true Northerly plane the compass needle should point to the Compass Declination, and not to the N. The Compass Declination at Los Angeles is approximately 16 degrees East, therefore the needle should be pointing to that place on the compass when setting up the machine in that city.

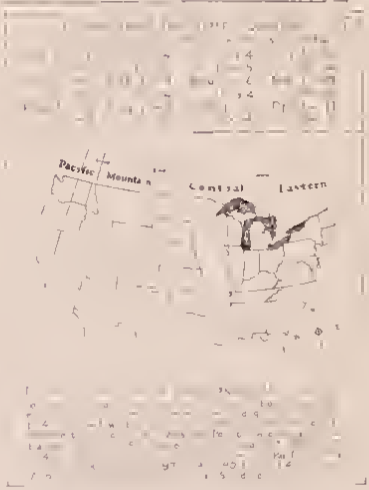
The difference between Standard Time and Sun Time will now be explained.

The meridian of any place is an imaginary line drawn across the sky from true North to true South, passing through the Zenith directly overhead.

The Earth's orbit about the Sun is not circular, but elliptical. In consequence, its speed in making this annual revolution is not constant, speeding up when near the Sun and slowing down when farther away. Principally because of this, the actual lapsed time from one meridian Sun to another varies from day to day. To compensate for this difference and keep all days in lapsed or measurable clock time, certain adjustments have been made for each day of the year. This is known as the Equation of Time, and the result is *Mean Sun Time*. Therefore, measured by Mean Sun Time, which is Clock Time, the Sun's arrival at any Meridian rarely occurs at 12 o'clock noon, being sometimes earlier and sometimes later. (See Table No. 1).

Mean Sun Time is the basis of *Standard Time*, which is simply the allotment of a uniform clock time of one hour to each zone controlled by a Standard Time Meridian 15 degrees East or West of the adjacent Standard Meridians. 360 degrees divided by 15 equals the 24 hours of the day.

Each Zone Meridian is about equi-



distant from its Zone boundaries on each side. Since the Clock Time (Standard Time) for the entire Zone is the Mean Sun Time at the Zone's Meridian, only rarely is the *true* Mean Sun Time at any place in the Zone more than 30 minutes earlier or later than Standard Time. In all portions of the Zone East of the Meridian, Sun Time will be later than Standard Time and it will be earlier to the West. Each degree of longitude equals 4 minutes. (See Table No. 1.)

For accurate Standard Time from Heliocator readings, allowances for both the variation from the observed, or true Sun Time, to the Mean Sun Time and for the distance of the observation from the Zone Meridian must be made.

Most atlases and maps show longitude lines, locations of Standard Meridians and time zone boundaries, while Compass Declinations and Tables of the

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This type of diffusion characterized the finest photography of twenty years ago

How Desirable Is Extreme Focal Depth?

By CHARLES G. CLARKE, A.S.C.

DURING the past year there has been a great deal of discussion as to the merits (or otherwise) of the so-called "pan-focus" system of stopping down to unusually small lens apertures to obtain extreme depth of field, as Gregg Toland, A.S.C., did so spectacularly in filming "Citizen Kane." Some cinematographers have urged that this technique represents one of the outstanding artistic advances of recent years. Others have argued just as insistently that this type of wiry-sharp camera-work was something we had discarded twenty or thirty years ago, and that, moreover, it tended to make the screen's story-telling technique dangerously static.

I wonder if the actual truth doesn't lie somewhere between these extremes?

Cinematography, it should be remembered, began its existence as a strictly mechanical process of making a photographic record of scenes and objects in motion. It was not until after the turn of the century that it was discovered that motion picture scenes, properly strung together, could serve as a medium for telling a dramatic story. Since then, the history of the cinema has been a constant search for the best way of combining the inherently accurate mechanical record of the camera with the dramatic and emotional values necessary for true story telling.

In the early days, the lenses available for cinematography were, to put it mildly, not of the best. Neither were emulsions or laboratory-processing. And as the cinema was just emerging from the mechanical record stage when the only aim was to get some sort of a picture on the screen, the ideal of good cinematography became that of getting not only a picture, but a clearly recognizable picture on the screen. Detail in every portion of the frame was the most cherished goal.

In still-photography, too, it was the day of super-crisp definition. Photography was just emerging from the "rapid rectilinear" era, and the almost unnaturally perfect detail of an anastigmat stopped down to *f* 64 was enticing.

But before long cinematographers and still-camera pictorialists alike began to discern the artistic limitations of this *f* 64 definition. Still photographers commenced to realize that a picture in which you could count every leaf on a tree a hundred yards away showed you *more* than the best eye could hope to see in reality. They discovered that injecting a softer optical quality into the picture made it more pleasing, and gave it an artistic feeling none of the *f*-64 school could ever capture.

At the same time, cinematographers, confronted with the task of making the tender and romantic moments of their pictures emotionally moving, also found that softness heightened the pictorial and dramatic value of their scenes. They discovered that flawless definition could tend to exaggerate the two dimensional flatness of their pictured image on the screen, while softness, especially the sort obtained using lenses are relatively open apertures, worked hand in hand with lighting to suggest roundness and reality.

So the pendulum began to swing. As the years went on, it swung to an extreme of softness. Look at any picture of fifteen or twenty years ago—still or movie. If it had any pretensions of being an example of good photography, it was almost certain to be an extreme case of "fuzzyography." On the screen especially, scenes of any dramatic value, or close-ups of women stars were almost invariably photographed with comparatively soft lenses, at maximum aperture, and further softened by incredibly strong diffusion—discs, gauzes, and the like—until the result on the screen was very sketchy indeed.

To gain this added softness and roundness, we went to great extremes. On exteriors, where ordinarily one would inevitably have to stop down to get a normal exposure, we employed Neutral Density filters and the like to permit us to shoot our exteriors, as well as our interiors, at apertures close to the maximum—*f*·2.5 or thereabouts—in the interests of soft quality and natural roundness. We plagued the film manufacturers of film for softer and yet softer gradations in emulsions, and our laboratories for softer quality in their development and printing.

Inevitably this trend carried to an extreme, and the pendulum began to swing back the other way. Cinematographers began to realize that not all pictures could stand this visually soft treatment. Some—like the gangster stories, and some types of horror pictures—demanded harsher, crisper visual quality. Other stories had a more or less documentary flavor, which demanded camerawork that stressed realism, so that the story reached the screen with more the quality of a well-photographed newsreel than of a studio-made production.

Today, it would seem that the pendulum has very nearly reached the opposite extreme in its swing, certainly, it would seem difficult for any films to go much farther in the direction of crisp definition and realism than Toland's "Grapes of Wrath" and "Citizen Kane." And though this basic technique has been more or less extensively used by other cinematographers on other pictures, both before and since "Citizen Kane," it would seem likely the trend is about to swing back toward softer quality again.

Certainly, we are seeing it demonstrated that in making constant use of short-focus lenses and abnormally small apertures we often gain extreme depth and definition at the price of that illusion of roundness which—fully as important as depth or definition—is a necessity in conveying the illusion of three-dimensional reality in our two-dimensional pictures.

In this straining for exaggerated focal depth, too, there is definite danger of overlooking one of the basic factors which makes the screen so powerful dramatically—its selectivity. In the pioneer movies, as on the stage, the story was told from one angle only—that of the long-shot. Intimate action had to be

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Aces of the Camera XIII:

GREGG TOLAND, A.S.C.

By WALTER BLANCHARD

SINCE the release of the spectacularly-photographed "Citizen Kane," the name of Gregg Toland, A.S.C., has probably been more extensively publicized than that of any other cinematographer in the history of the industry. Thousands of people who had previously never given a thought to the men who photograph the pictures they see, now speak knowingly of the importance of the cameraman's contribution, and refer to Toland as Hollywood's foremost master of the camera.

Most of Toland's fellow cinematographers also agree in rating him very close to the top of the camera profession. But with one difference: they base their judgment on the many superbly photographed productions he had filmed before "Citizen Kane" and its attendant publicity came along. For "Kane" and Toland's treatment of it sharply divided the opinions of the professional photographic community. Some feel he has made a tangibly worthwhile contribution to camera technique. Others feel just as strongly that the "Kane" technique is reminiscent of methods discarded before cinematography reached its present maturity. But they all agree in praising the artistic and technical skill which produced such films as the Academy Award-winning "Wuthering Heights," "Intermezzo," "The Long Voyage Home," "Grapes of Wrath," the Technicolored "Goldwyn Follies," and innumerable others.

Most of them feel, too, that Toland's acknowledged brilliance has placed him in the most nearly ideal position any Director of Photography has enjoyed since the halcyon days when D. W. Griffith and Billy Bitzer were between them creating the basic technique of the screen. For Toland, as Chief Cinematographer for Samuel Goldwyn, enjoys the confidence of a producer whose chief aim is to turn out the most nearly flawless productions possible. Inevitably, Toland's hand is more free than most; he is able to participate actively not alone in the actual shooting of Goldwyn productions, but to a surprising extent in shaping and completing them as well. Most important of all, he is able to experiment, both technically and artistically, on a scale impossible where cinematographer and producer alike are bound by the restrictions of a rigid schedule and budget.

One of those experiments, first tried out on a conservative scale in scattered scenes for "Wuthering Heights," led to the "Citizen Kane" pan-focus technique. But he has made many others, in other directions. He was among the first, for example, to utilize Super-XX negative as a production emulsion, and among the first, too, to enthusiastically endorse today's fast films when they made their bow some four years ago. He was among the first, if not actually the first top-flight cinematographer to experiment with coated lenses and to stake his photographic reputation on their performance on an important production.

Gregg Toland himself is as unlike the popular conception of a top-rank director of photography as can easily be imagined. For one thing, he is young. The official records of the A.S.C. give his age as only 37, which makes him almost without question the youngest of the industry's ace cinematographers. Slim and rather slightly built, he carries himself with a slight stoop which makes him seem at once smaller and older than he really is, and probably indicates, as well, something of the tremendous burden of responsibility that rests on his shoulders.

He is, I should say, very fully conscious of that responsibility. He throws himself into his work with the same tensely nervous energy that characterizes so many of the photographic leaders of the industry. Indeed, he gives the impression of being physically tired—until you get him started talking about his work. Then he brightens up, flashes a disarmingly youthful smile, and speaks with almost boyish enthusiasm about this idea or that he is working with.

He's keenly conscious, too, of the vital part a director of photography can play in preparing and making a picture if the studio heads will only realize he can be more than merely a photographer. If you know him well, you sense a consuming desire on his part to make the opportunities and acclaim that have come to him as an individual help "sell" the camera profession as a whole not only to the public, but to the industry itself.

His own association with Goldwyn, Orson Welles, Howard Hughes and other outstanding producers has given him unusual opportunities not only to dare to do the unusual in camerawork, but to put the imprint of his picture trained mind on the making and presentation of every production with which he is associated. But—and you can feel him mentally underscoring this—he isn't the only cinematographer capable of playing such a part in the planning and realization of a film. There are many other directors of photography who, granted similar opportunities, could contribute just as outstandingly to making their productions better examples of screen entertainment. What he does in this direction, he hopes, will help give some of those others a chance by making other producers ask themselves, 'If Sam Goldwyn gets so much help by giving Gregg Toland a chance to take

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A.S.C. on Parade

We're glad to report that the latest news from the 20th Century-Fox unit on location in Honolulu tells that all members of the troupe, including Director of Photography **Harry Jackson, A.S.C.**, Technicolor Specialist **Wilfrid Cline, A.S.C.**, and Assistant Cameraman J. Stout, son of **Archie Stout, A.S.C.**, were safe aboard one of the Navy's battle-wagons at sea when the Japs made their knife-in-the back attack. We understand they've obtained some outstanding Technicolor footage, all or part of which may be taken over by the Navy.

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Director of Photography **Gregg Toland, A.S.C.**, has doffed his civvies for the uniform of a Lieutenant in the Navy's Photographic Section. Accompanied by Lieutenants **Sol Halprin, A.S.C., Arthur Arling, A.S.C., Harry Davis, A.S.C.**, and several others, he's off for active service "for duration." Before leaving, the A.S.C.-Navy lensers prudently raided the Mitchell camera factory and made off with every available camera.

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Yachtsman **Vernon L. Walker, A.S.C.**, is also doing his bit nautically. His 38-foot cruiser "Relax" has gone into volunteer service with the U. S. Coast Guard—in wartime part of the Navy—as a patrol-boat. Skipper **Walker** stands by to go to sea with his ship as Master, and Dick Davol, from RKO's Camera Dept., is Mate, with a crew of coast guardsmen. What with reports of Jap subs off the California coast, it looks to us as though **Verne** had maybe given his boat the wrong name—!

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Lieutenant Victor Milner, Jr., U. S. Army Air Force, is reported to be one of the few Army fliers to rate a Christmas vacation. Son of **Victor Milner, A.S.C., young Milner** is recovering from injuries received in a serious crash while instructing a student at the Air Force's training school in Texas, and was granted a holiday furlough to visit his celebrated dad. We'll bet he made some of the other Army airmen doubly envious, for when he dropped in at Paramount to say hello to his old friend **Billy Mellor, A.S.C.**, the still-man insisted on taking his picture with lovely Madeleine Carroll.

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If you saw those sensational Pathe News scenes of the Japs' attack on Hawaii, thank **Len Roos, A.S.C., F.R.P.S.** who lensed 'em. **Len**, so we learn, has just received his appointment as the official representative of the newsreels' wartime pool of camera-crews. He covers the Hawaiian front.

Friends of **Roy Overhaugh, A.S.C.**, who have been wondering why they haven't heard from him in all these months ought to know **Roy's** been mighty sick, almost fatally so, in fact. He's been in the hospital since last April, undergoing two operations. But he's better now, and would appreciate visits from his friends.

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With **Solly Halprin, A.S.C.**, called away on active duty with the Navy, his place as Head of 20th Century-Fox's Process Department has been taken by **Edward J. Snyder, A.S.C.**

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James B. Shackleford, A.S.C., sailed December 19th for South America. He'll be filming an adventure and animal film in Brazil. Present plans are that "Shack" will begin his trip by a two-months' trip up the Amazon, followed by a visit to Rio de Janeiro, after which he'll head into the famed Matto Grosso country. He promises to send us appropriate stills and reports of his travels.

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We ran into **Ted Tetzlaff, A.S.C.**, on the street one day just before Christmas. We gather his prayer to Santa Claus was for a really good story to direct, 'counta he'll still on Paramount's payroll as a Director. Why is it, anyway, that no producer has yet handed any cameraman an even half-way decent script when they promote him to directing?

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Leon Shamroy, A.S.C., with "Rosie Hart" (nee "Chicago") duly committed to Plus-X, draws the lensing assignment on 20th Century-Fox "Ten Gentlemen from West Point" as his next.

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Harold Lipstein, A.S.C. off to the desert to lens special desert scenes for MGM's coming colossal "Rio Rita."

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We hope there's nothing to the rumor we hear about one rising young member of the A.S.C. who, when another ditto visited him on the set recently, asked his visitor to leave. There's such a thing as professional courtesy, you know—also swelled craniums.

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Did you know that during the last year or so **Alvin Wyckoff, A.S.C.**, has been putting in his spare time at the university, annexing a Doctor of Science degree? That makes at least the fourth member of the A.S.C. who can be properly addressed as "Doctor." The others include **Ted Sparkuhl, A.S.C.**, who used to be a practicing medico; **Floyd Jackman, A.S.C.**, who is one of Hollywood's best toothpullers, and **Floyd Crosby, A.S.C.**, who we understand also has the right to the handle of "Doctor," though he never uses it.

Speaking of **Floyd Crosby, A.S.C.**, he's still deep in Mexico working on Orson Welles' forthcoming Dolores Del Rio starrer. He took the assignment over when **Al Gilks, A.S.C.**, was called into Navy service, and we understand he's going to town on it. He recently sent for one of those new Norwood exposure-meters, by the way.

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James Wong Howe, A.S.C., is even talking Chinese with a Brooklynese-Irish accent, they say, since he's been lensing Warner's "Yankee Doodle Dandy," the filmography of George M. Cohan.

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Tony Gaudio, A.S.C., very much Americanized in spite of his Italian birth, tells this one about the state of his native country under the chap **Tony** politely refers to as "that soonabeech Mussolini." He says if you're an optimist in Mussolinland, your slogan is, "We're going to lose the war." If you're a pessimist, you say, "Yeah—but how long do we have to wait before we lose it?"

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Miss Bette Davis, President of the Academy of Motion Picture Arts and Sciences, lately announced the appointment of a Committee of Directors of Photography to consider rules to be used to govern this year's Cinematographic Awards.

Membership of the Committee consists of Ray Wilkinson, Chairman, John Arnold, A.S.C., Dan Clark, A.S.C., Charles Clarke, A.S.C., Robert DeGrasse, A.S.C., Elmer Dyer, A.S.C., Arthur Edeson, A.S.C., Fred Gage, A.S.C., Merritt B. Gerstad, A.S.C., Ernest Haller, A.S.C., C. Roy Hunter, Milton Krasner, A.S.C., Art Lloyd, A.S.C., Sidney Lund, Rudolph Mate, A.S.C., E. B. McGreal, Arthur Miller, A.S.C., Ernest Miller, Victor Milner, A.S.C., L. William O'Connell, A.S.C., Robert Planck, A.S.C., Charles Rosher, A.S.C., Joseph Ruttenberg, A.S.C., Mack Stengler, A.S.C., Karl Struss, A.S.C., Ted Tetzlaff, A.S.C., Leo Tover, A.S.C., Charles J. Van Enger, A.S.C., Joseph Valentine, A.S.C., Joseph Walker, A.S.C., and Gordon S. Mitchell, Manager of the Academy Research Council.

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Did you notice the credit-titles on the recently previewed "Shanghai Gesture?" Director of Photography **Paul Ivano** took his credit MINUS the **A.S.C.** he's entitled to append after his name. But **Director Josef Von Sternberg**, also an A.S.C. member, proudly took credit in large letters as follows: "Directed by **JOSEF VON STERNBERG, A.S.C.!**" Thanks, Joe, for a very fine compliment.

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Jack Guerin, A.S.C., took time out from his Gasparcolor activities to spend the holidays with his folks in Louisiana. Wonder if he ran into the alphabetical Paramount Newsreel ace, **John L. Herrman, A.S.C., F.R.P.S., F.R.S.A.**, down New Orleans way?

THROUGH the EDITOR'S FINDER

WITH America's participation in this war not yet a month old, the motion picture industry is already settling into the pattern of its participation in "all-out" war. Many there are in all branches of the industry who have joined the Nation's Armed Forces Producers, Directors, Cinematographers, Writers, Sound-engineers, Actors and many others have gladly abandoned safe and lucrative jobs to put their particular skills actively to work in uniform.

But those who remain have a task no whit less important, fraught with difficulties and responsibilities, as well. Theirs is the twofold task of carrying on under wartime difficulties—even, it may be, under fire—and at the same time turning out steadily better screen entertainment to the end that morale on the vital "home front" may remain high.

We in the cinetechnical community are going to have to learn how to make pictures in spite of shortages of many types of equipment and materials we once deemed indispensable. And no wonder: factories capable of turning out cameras and projectors of the type that made American cinemachinery supreme throughout the world have the uniquely high skill needed to produce in quantity many types of precision war implements. The factories which made lamps and many other accessories have skill which is already solving many perplexing problems in making aircraft assemblies to defend our studios. Plants which have served the motion picture industry in peace time, with its perpetual array of unconventional problems and its perpetual rush when in need of a new device, are uniquely adapted to meeting the unconventional problem, and solving it speedily and well in wartime.

We can be thankful for this, and doubly thankful that these firms which supplied our peacetime needs habitually built into their products ruggedness and endurance far exceeding those any other nation ever built into similar precision machinery. Our cameras, recorders, lamps, dollies and accessories may not all be new; but thanks to the American ways of design and craftsmanship, we can depend on them to keep on doing their job "for duration," even as their human users do theirs.

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WITH the threat of bombings and blackouts, the studios have revised their daily time-schedule. As this is written, they have just gone on a strictly daylight basis, working from 8 to 5 daily, with night work eliminated. Night exteriors are barred, save as they can be photographed by day with filters, or filmed indoors under lights.

It is a strange commentary on human nature that it took the world tragedy of a war to bring this about. For years, every employee group in the industry has been fighting to bring the industry's leaders to a realization that film workers, no less than other people, work best if they can keep normal working hours with time for a normal home life in between. The reply to this has always been that such hours—sometimes sixteen or twenty out of the twenty-four—were economically necessary to keep production costs and receipts profitably in line.

Already, the reports of the first day of the industry's new daylight schedule are disproving this. Studios are saving some money by the elimination of the large overtime payments made to movie workers for working unusually long hours; the workers are offsetting this loss to some extent by the slight extension of schedules needed to turn out equivalent footage without overtime work. Most important, the heads of our industry are discovering that men and women who put in a normal working day can work better and faster than men and women forced to work all the day and half the night. Reports from every studio indicate that on today's wartime eight-to-five basis, more scenes are being shot daily. We've an idea they'll prove to be better scenes, too, for on-the-set creators can turn out better work when they're no longer physically and mentally tired.

Predictions of any sort—especially in times like these—are usually hazardous. But we'll venture one: when this war is over, the industry will find this new daylight working day, adopted originally solely as a war measure, will be worth-keeping because, in war or peace, it is more efficient, producing more and better work!

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THE professional, theatrical motion picture has been recognized already as a wartime essential. Non-theatrical and amateur movies should, we believe, receive very nearly similar recognition.

The value of employee-training films made for use in Defense Industries will be readily appreciated. Anything that can contribute to greater efficiency among Defense Workers is vital; if 16mm. movies can help increase the efficiency of workers so that they can turn out one plane, one tank, or even one shell more per day, those films shall have richly served their country. In other fields, similar films can serve importantly in showing the general public how to make existing supplies and services go farther, in spite of wartime curtailments. Such non-theatrical films, too, should be encouraged.

But the value of strictly amateur home movies may not be so immediately apparent. Yet it exists. Civilians in wartime need some means of mental escape from the nervous strain under which all must live and work. Theatrical entertainment has been recognized as one of these psychological safety-valves. But it is only one, for there are times when it may not be possible to go to the theatre just to get an evening's respite from nerve-strain.

That is where such personal-participation hobbies as amateur photography and movie-making can play their vital part. They can be practiced largely in and around the home; certainly, the nation's amateurs are sufficiently patriotic to avoid using their cameras on subjects of military or tactical importance, if, of course, they are given warning of what those subjects are. But to the enthusiastic amateur photographer, there is nothing so completely relaxing—nothing in which one can so completely lose himself from the cares and worries of every-day life in peace or war, than practicing his hobby. How he does it may take different forms; some like to shoot pictures; others, to develop or print stills, edit or title movies, or tinker up some needed gadget. This writer, for example, finds nothing so relaxing when frayed, tired nerves are shouting, as to take a few hundred feet of substandard cine-film and lose himself for an hour or two in editing it.

The availability of new amateur cine equipment has already been considerably curtailed by the Defense Program; it is likely to be still further reduced by the "all-out" War Effort. And very properly so. But in behalf of the nation's 2,000,000 amateur still and cine enthusiasts, we urge upon the Nation's leaders that they look understandingly on the real value of the hobby. We urge that the supply of film and similar materials for civilian use may still be kept flowing, and that authorities—particularly local ones—may be wise enough not to place unnecessary restrictions on the use of cameras. Amateur photography and cinematography is too valuable a safety-valve for a big and important section of our people to be restricted unnecessarily when it is needed most!

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As we commence our second year as Editor of THE AMERICAN CINEMATOGRAPHER, we'd like to express our heartfelt appreciation to all of the many friends whose encouragement has meant so much to our efforts to improve their magazine. Some of them we know personally; others we know only through correspondence or through articles submitted for publication. But all of them we count on as friends. And to them we want to say a sincere, and humble, "Thank you" for their heartwarming encouragement. During the past twelve months we've received more letters and other expressions of approval than we've ever seen come across this desk, and fewer complaints, despite the fact that to us each issue seems to fall distressingly short of the goal we've set ourselves.

New Photographic Books

THE PHOTOGRAPHER'S RULE BOOK, *By Larry June* (McMillan, $1.25) This little book is intended primarily for the benefit of the still-photographer with an inexpensive camera and little or no understanding of picture-making beyond the "you press the button, we do the rest" stage It should serve its purpose admirably It is almost the first book of its type we have seen which didn't overreach itself through trying to tell the beginner *too much* and confusing him with semi-advanced information about developing, printing, and enlarging for which he certainly isn't ready until he can turn out better, more interesting snapshots with his "Brownie" and drug-store finishing

June hews strictly to the line of telling, in simple, understandable language how to use a cheap camera to make real pictures He illustrates it with excellent pictures, made with the same, simple cameras his readers will probably use, supplemented where necessary by sketches which cleverly visualize such abstractions as *f*-stops, shutter-speeds, and the like

But just because "The Photographer's Rule Book" is intended for still-camera novices, don't pass it up If you do, you'll also be passing up some chapters on composition and the like which should be helpful even to the owners of Lordly Leicas, Speed Graphics and cine-cameras! W S

"HOLLYWOOD" by LEO C. ROSTEN

UNDER grants from the Carnegie and Rockefeller foundations, Leo C Rosten, author-sociologist, with the aid of eleven assistants, have investigated the movie colony of Hollywood.

The result has been a book that should not only be widely read but mentally digested by every individual who wishes to be factually enlightened about semi-mythical Hollywood, especially by those unenlightened remote individuals living in the environment of their own romantic dreams, those emphatic souls who believe they have a wee spark of genius resting within them undeveloped, waiting to be discovered and tutored into dazzling brilliance and fame

Dr. Rosten lets you study Hollywood, he does not gossip with you. He tells you about the real Hollywood, the final result of long days and nights stretched over a toiling period of three years of labor.

The horrors of Hollywood have not been catalogued, nor has its virtues been whitewashed Facts You do with them as you wish Hollywood is X-rayed and pulled apart—diagnosed

The author has not been content to skim over the surface of scintillating brilliance, he has dug deep into the dark pits of blasted hopes and the wreckage of public opinion; far beneath the glamorous appearance of the surface

He has lighted the treacherous, idiotic, scramble for padded publicity in the defense of the human nature of Hollywood to prove it is no different than the gilded aristocracy of other places.

He draws a sharp line of contrast. Hollywood is laid bare to the public gaze The truth of fact is exposed Statistics of interesting data stand out boldly to prove the fact; figures are truthful.

We are told that the outside world believes, "The movie colony to be more or less dominated by maniacs, operated under the laws of lunacy, and populated by an assortment of illiterates, divorcees, crackpots, and poltroons" In defense, it is said that, "Hollywood was not created out of a void; its characteristics were not invented; its people did not descend from Shangri-La

"The men and women who work in Hollywood came to the film colony from other parts of America and the world; and they brought to Hollywood appetites which have been gratified, aspirations which have been realized, in this rich and indulgent community on the Pacific

"The citizens of Kalamazoo who possess the unique and sometimes distressing temperaments of actors, writers, directors, producers and others of many crafts would not behave differently if THEY had the money, the opportunities, and the sanctions afforded the mortals who live in the movie colony"

Contrasts are sharp "... uneducated captains of industry are praised as 'self-made men,' uneducated movie executives are dismissed as 'illiterates' Erratic bankers are called 'eccentric,' but erratic movie makers are called 'crazy,' Hard-bargaining business men are admired for being shrewd, their counterparts in Hollywood are denounced for being 'mercenary.' And where the private indiscretions of Park Avenue are winked at as all-too-human peccadillos, those of Beverly Hills are paraded forth as proof of movie licentiousness"

It is admitted " that things do happen" And so do things happen at other spots in these United States where people get together that would be just as severely criticized if the glare of publicity was turned on However, "The mad days of Hollywood have passed their peak There is an increased seriousness in the movie colony, and an approximation of dignity there is much in the town to command respect those producers, writers, directors, performers, photographers, publicists, make-up artists, and members of a hundred other crafts who are skilled and who are responsible for the best that is on the screen are earnest, talented men and women who would stand out in any company,"

Hollywood possesses the same degrees and levels of society as any other community It has its poor, rich, and great

"The movie colony is the high court of Hollywood; the movie elite is the regency council Its people are characterized by notoriety, not pedigree; its position rests on money, not birth; its fame depends on publicity, not ancestry . Hollywood represents an aristocracy of wealth Its magnificos are young, untrained in the art of the good life, untempered by old codes of behavior " . In such an elite, gradually enlarged and diversified the people sees itself mirrored and seeks its models"—A W

The American Cinematographer's Hand Book and Reference Guide—Fourth Edition; Compiled by Jackson J Rose, A.S.C. (Published by Jackson J. Rose, Hollywood, $3.50.) During the past ten years the "Jackson Rose Handbook" has become without question the world's standard practical reference work on cinematography Today's Fourth Edition worthily carries on the tradition established by the three successive printings which went before. It includes all of the highly practical phototechnical information in the previous editions, in many instances brought up to date for modern materials, methods and equipment, and incorporates some thirty additional pages of new data

These additions include up-to-the-minute information on 16 mm and 8 mm. cameras, lenses, film, projection, etc., and a considerably expanded coverage of still photographic materials and methods, including such timely matters as the use of the new Infra-Red "blackout" flashbulb technique for making speed-flash pictures by invisible light. Reflecting the increased importance of 16 mm sound-on-film for both professional and amateur use, sections on 16 mm recording and equipment make their appearance for the first time.

Our own experience with previous editions of Mr Rose's volume is that it is essential for anyone active in cine or still photography The new and larger edition bids fair to be even more valuable We'd say it's well worth $3.50 of any photographer's money!—W S

PHOTOGRAPHY AS A VOCATION, *By Andrew R. Hecht and George J. Berkowitz* (American Job Series, No 24; Science Research Associates, 1700 Prairie Ave., Chicago.) This little booklet is an interesting survey of the vocational possibilities of photography in its various forms, giving at least an idea of what photographers in various types of work do, and the possibilities of making a career of such work It appears to cover the various fields of still photography quite well, but unfortunately it makes scant mention of cinematography, commenting only briefly on studio and newsreel cinematography and ignoring the growing field of industrial or business-film cinematography. W S

PHOTOGRAPHY OF THE MONTH

THE NIGHT OF JANUARY 16TH

Paramount Production.

Director of Photography: **John Mescall, A.S.C.**

"The Night of January 16th," we suspect, was intended to be more or less of a routine, program-picture "whodunit"- but John Mescall's camera lifts its very much above the program class. He gives it some of the finest dramatic camera-treatment we've seen in some time. From start to finish the film has that sort of photographic smoothness only the industry's top camera-experts can consistently maintain — a silkily-smooth visual quality that gives even the non-photographic viewer the feeling he has seen a "class" production.

Mescall's effect-lightings are particularly interesting, especially those in the earlier part of the picture. They do a great deal to build up the required melodramatic suspense- but they go farther than this. Mescall has handled his lighting of these sequences in such a way that the effects are logical and believeable—a very welcome change from the all too-common practice of planning effect-lightings for pictorial or dramatic effect alone, without regard to their credibility. John Mescall's handling of these sequences are exceptionally well worth study by professionals, as well as amateurs. They're models of their kind.

His treatment of the players is fully up to his usual fine standard. The men, of course, have their share of strong character-lightings, and Ellen Drew's screen appearance, so surprisingly bettered in her recent release, "Our Wife," continues its improvement.

The process-work, as usual at Paramount, is uniformly excellent, and is particularly interesting in one scene where the two stars look from the window of a transport plane at the City of Havana, and the camera dollies up to and apparently through the porthole to a fine aerial view of Cuba's capital. The direction and cutting are interesting examples of fast-moving tempo; some of the cutting, for that matter, is almost too quick. There are several interesting transitions, not only the very well-used wipes, but also those employed in the courtroom sequence, to speed up the parade of witnesses on the stand. In this, the prosecuting attorney asks his question, then walks between camera and witness as the reply is finished, blocking off the view; as he passes, another witness is seen on the stand and dialog and action continue virtually unbroken. The settings by Hans Dreier and Haldane Douglas are also worthy of special notice; excellent in themselves, they are made particularly attractive by Mescall's lightings, and help give "The Night of January 16th" the impression of being an unusually well-mounted production.

THE MEN IN HER LIFE

Columbia Production.

Directors of Photography: **Arthur Miller, A.S.C.**, and **Harry Stradling, A.S.C.**

Directors of Photography Arthur Miller, A.S.C., and Harry Stradling, A.S.C., have, in "The Men in Her Life," turned out one of the most completely expressive examples of fine dramatic cinematography the season has seen. Sensitively keyed to the dramatic moods of the story, their camerawork is at times almost hauntingly pictorial.

This is particularly true of the earlier sequences of the picture—perhaps the first half—in which compositions and effect-lightings build the production's basic mood like a powerful overture, with a power and beauty scarcely equalled since last season's Award-winning "Rebecca." Scene after scene in an eloquent tribute to the emotional power of the camera in skillful hands.

Production designer Nicholai Remisoff, too, has done a beautiful job on this picture—one that well atones for his overly aggressive sets which so marred "My Life With Caroline." There are several touches, too, such as the moving shadows on the tent-canvas which in the opening sequence plant the atmosphere of the circus, which show praiseworthy originality.

All told, "The Men in Her Life" should be on the "must" list for anyone interested in fine cinematography.

THE FEMININE TOUCH

Metro-Goldwyn-Mayer Production

Director of Photography: **Ray June, A.S.C.**

One could hardly say this diverting comedy is typical of the very best work Ray June, A.S.C., can turn out, though it is photographed with much of the usual June deftness and skill. From what we saw on the screen, we'd be inclined to suspect June's hand had been forced here and there by a director or executives who were for the moment more interested in speed than in the all-around production quality for which MGM is famous. Photographically, it shows in little things one usually doesn't see in one of June's pictures, a little lack of smoothness in diffusion continuity here, a trace of uneven halftones there, and so on.

On the other hand, there is photographically a great deal that is excellent in June's work in this film. His general treatment of the players is pleasing—especially in the instance of Kay Francis—and his compositions and set-lightings are excellent. The real photographic highlight of the picture, perhaps, is the surrealistic "nightmare" sequence, which is not only amusing, but unusually interesting pictorially. For that matter, "The Feminine Touch" is very diverting entertainment from start to finish, though dramatically it could have stood some cutting to good advantage.

LOUISIANA PURCHASE

Paramount Production (Technicolor)

Directors of Photography: **Ray Rennahan, A.S.C.** and **Harry Hallenberger, A.S.C.**

How you will like "Louisiana Purchase" depends on how you like your Technicolor. If you favor it strong, after the fashion of the "Mississippi river water" upon which Victor Moore becomes boiled in the picture, you'll like "Louisiana Purchase." But if, on the other hand, you've seen enough other Technicolor films like "Blood and Sand" and "Blossoms in the Dust" to favor a more restrainedly artistic use of color, Paramount's favorite musical will probably disappoint you.

In any event, you'll agree that Directors of Photography Ray Rennahan, A.S.C., and Harry Hallenberger, A.S.C., have done their part of Technicoloring the film excellently indeed. Their lighting-treatment is necessarily largely in high-key "comedy" lighting—sometimes done with a good deal more contrast and sparkle than is usual in conventional Technicolor technique—and graced surprisingly by several really excellent, low-key effect-lightings in which excellent use of color is made. They have dealt excellently with the players.

Compositionally, "Louisiana Purchase" is delightful. The spectacular settings afford innumerable opportunities for spectacularly eye-filling compositions, and Rennahan and Hallenberger take full advantage of every pictorial possibility. The opening sequence, and especially the following one in which the "Louisiana Belles" very decoratively sing the picture's denial of "any resemblance to any places or persons, living or otherwise," gets the picture off to a novel start both dramatically and pictorially.

On the other side of the ledger are the settings and costumes which are publicly blamed on Raoul Pene du Bois, who seems to have been above the art supervision of the dependable, studio-wise Hans Dreier and Robert Usher, to say nothing of Technicolor's Natalie Kalmus and Morgan Padelford. Mr. du Bois very evidently set out to create "a riot of color." In this, he was wholly successful; but in designing a background for motion picture entertainment, he was more nearly a failure. Repeatedly the background, with its use of strong colors and baroque designs, forced itself into the foreground of the viewer's attention. Such settings might, when used on the stage, where the audience has a wide field of view and can select whatever it wishes to see or to ignore, perhaps be considered decorative; but on

(Continued on Page 31)

DODGING JAPAN'S CAMERA-CENSORSHIP

By FRED C. ELLS

THIS afternoon of December 17th, 1941, I was happily engaged in trying out the beautiful unearthly effects of various colored gelatins on a seascape. You know, just experimenting and figuring until the right combination would justify fifty cents' worth of Kodachrome. The scene of my activity was the end of the Santa Monica pier. Fifteen or twenty minutes passed, but still no shot, when a young gentleman of 22 or so, in a natty outfit donated by a grateful government, stepped up. He wore a metal soup-plate, inverted, and a pleasant, but apologetic smile. He intimated politely that inasmuch as his present employers were at outs with a certain oriental people some 6,000 miles due west west by north, photography of Santa Monica seascapes couldn't be allowed, either now or in the indefinite future. So I carefully folded my gelatins, and silently stole away.

A few minutes after I arrived home the telephone rang. It was the Editor of THE AMERICAN CINEMATOGRAPHER, suggesting that an article on photographic censorship in Japan would be timely and instructive. Somehow, he caught me right in the mood.

I think I can qualify as an expert on Japanese photographic censorship, which for years has been the most severe in the world. From 1925 to 1940 I took pictures constantly there, and never got locked up, in spite of the expectations of all my acquaintances. That is a record few foreign photographers can equal. Accurate knowledge and discretion was the secret of my success. Not that I ever got to feeling cocksure over my photographic success. You don't when, as I did during the last few years of my stay in Japan, you know there is at least one plainclothes member of the Japanese Gestapo trailing you constantly!

In 1925 the sole legal restriction on photography was in certain specified Fortified Areas. Each of these areas was outlined on maps, and warnings were plainly posted in both Japanese and English on roads and paths leading into such areas. The restrictions also applied to sketching and surveying. Resident photographers naturally knew where these forbidden areas were, and if they had a modicum of brains, avoided them. But frequently a tourist would get caught, and lose some hours explaining all about it to the police. In such cases the films would be confiscated. Usually, but not always, the camera would be returned.

There were several pitfalls into which the unwary visitors fell. First, there were not many signs, and the newcomer didn't notice them when passing in an automobile. Chauffeurs and other civilians were too polite to protest to the visitor, but would turn the information over to the police after the damage was done. Then, second, the visitor might be outside the area, but unwittingly shoot over the line. Thirdly, in some places inside the areas photography was winked at, because of a popular subject located there. An instance is the great bronze Buddha at Kamakura, perhaps the most photographed object in all Japan. But woe betide the wight who snapped a shutter outside that temple compound. And then, there was always the smart guy who tried to get away with something. For him, no sympathy.

Under this Fortified Area restriction I was questioned twice by the police. The first time I was five miles outside an area—I had found a Japanese making geta (wooden shoes). It was a subject I wanted badly, and after the usual preliminaries, shot fifty feet or so. Of course a crowd gathered, and just as I was leaving, a cop arrived on a bicycle, complete with saber. He wanted to know what was going on. After some discussion he agreed that taking the workman was all right, but not to take anything showing the road or mountain contours. I confused the issue by asking whether the workman was a carpenter or a cobbler. While the cop was thinking that one over, I departed hastily.

The second time I was well outside the sacred line. I was making a picture of rice culture. One of the interesting aspects was the fertilization of the fields. The farmers came into the cities, where there is very little modern sewerage, and go from home to home collecting nightsoil from the outhouses and privies. In the spring there is a steady stream of handcarts loaded with this odorous booty outward bound to the farms. It took me some time to get the shots I wanted. The next morning a policeman arrived at the office, and asked me what I was doing, surveying without a permit. Someone had seen the camera on a tripod, taken my auto license number, and reported me for surveying. When I explained that I was taking pictures, there was no further inquiry.

Sometimes it was possible to get a permit to photograph inside a Fortified Area, and the procedure was rather interesting. I once needed some shots of fish, and the only aquarium in the Yokohama area, where I lived, is in a Forbidden Zone. The director, a famous marine biologist named Dr. Eri, was educated at Yale, and had studied his subject at Wood's Hole, Massachusetts. Dr. Eri is one of the most cultured gentlemen it has ever been my good fortune to meet. He was most helpful, and wrote to the Commander of the district.

In due course I received a number of forms to fill out, giving my name, why I wanted the pictures, the type of equipment, the exact day and hour the pictures were to be taken, and a great many other points. I sent these off and in a few days was requested to come to the army headquarters at Yokosuka. I had an interpreter with me, and at the headquarters we picked up an army officer.

At the aquarium we found a plainclothes-man and a private soldier. A careful record was made of all the film I shot, and at the beginning and end of each roll I had to shoot a few identifying frames of the faces of the plainclothes-man and the soldier.

Mind you, every inch of the shooting was inside the building. At the end I was allowed to keep the film for processing. When it returned from the laboratory I took my projector and screen over to Yokosuka, and a board of five officers reviewed it. They pronounced it harmless, and gave me a certificate to that effect. Note that my permit was good only for that one appointment. A Japanese could get a permit good for several months.

Two Fox Movietone friends of mine, Alexander and Tappan, were taking a 35mm. news short of the race track one day. They had a policeman assigned to watch them, but because the track overlooked the Fortified Area, and in spite of the police guard, the film was confiscated, much to their disgust.

As the nationalistic spirit grew stronger in the early 1930s, new restrictions appeared. The National City Bank of New York wanted pictures of the big buildings around Kobe and Osaka for some publication, and got into serious difficulties over them—in spite of the fact that every publication in Japan carried such shots regularly. Then it became unlawful to take pictures of any waterfronts and seashore anywhere, railroad stations, bridges, power plants or any sort of industrial plants, power lines, police or military activities of any sort, any public buildings, or any shot from a height of over 100 yards. So many visitors got in trouble that the steamship lines forbade visitors to take cameras ashore, and any foreigner seen carrying a camera would be trailed. It was at this point that I switched from filming agriculture to insects and flowers. It was much healthier, I found, if less adventurous!

An officer was stationed at each of the various film-processing plants, and in theory at least, reviewed every inch of film developed. Any roll containing any shoreline or other identifiable physical feature, or any "distress subject" reflecting on the dignity of a sensitive people with plenty of distress available, would be confiscated without hesitation—not only the offending footage, but the whole roll—and occasionally there would be follow-up inquiries as well.

As the situation tightened, a law was passed forbidding the exportation of exposed but unprocessed film. This ruined the foreign newsreel business, as the processing done in Japan was of inferior quality, and further, spot news would have whiskers by the time a subject could be processed and passed by the censor. At one time there were camera crews working for Fox, Hearst, Pathe, and Paramount, as well as occasional free-lancers on short subjects. All of them were squeezed out one at a time.

At present the newsreel business in Japan is run by the big newspapers, like the Asahi Shimbun, or the Nichi Nichi Shimbun. They have large staffs, all equipped with Bell & Howell Eyemos, spring-driven type. Several of these photographers have been killed in action in China. They each put out one reel a week, and the runoff is one hundred copies. Processing is by the tank and rack method. Before the "China Incident" in 1937, practically all the film stock used in Japan came from abroad. I understood that the locally manufactured films and papers were coated with imported emulsions. With the tightening of exchange regulations, the local manufacturers began turning out emulsions. These were extremely contrasty, with no range of tone, and the sensitivity was exasperatingly uneven. American news-photographers, like "Life's" Paul Dorsey, have related that the most prized present they could give a Japanese officer (practically all of whom use cameras) was a load of genuine American-made film.

Japan's factories turned out several types of still and cine cameras, usually close and not always licensed copies of American or European types. A favorite type of still-camera, for instance, was a Japanese-made composite of the Leica and Contax designs. In the professional movie field, I understand their studios often used painstakingly Japanese-made copies of the Bell & Howell and Mitchell. In the amateur field, most cameras and projectors bore startling resemblances to familiar American types. It was somewhat disconcerting, though, to run your films on a Nipponese projector of hybrid design which might combine an imitation-Bell & Howell lamphouse on a synthetic Ampro movement and carefully-reproduced Eastman or Victor base!

Naturally, all films, amateur or professional, had to pass the police censorship before being publicly shown. "Publicly shown" means any projection outside of a private home. There were brokers who made a specialty of performing this service. First, all titles, dialogue, and printed matter appearing in the picture had to be written out in detail in the original language. Then this material had to be translated into Japanese, and bound into a book. This book was then duly stamped with official seals. There had to be one copy of the book for each print of the film, and the book had to accompany the print at all times, so that it would be immediately available to any police official who desired to check a performance. I've often wondered how some of the language in our musical comedies and gangster pictures must sound when converted to Japanese—I'm sure our slang must have been a headache to the translators. I also must mention that the prints also bore an embossed impression, pressed deeply into the celluloid, of the censorship seal.

The censorship cut out protracted love clinches, and anything that might reflect on the dignity of any ruling head of any government—especially an Axis one. Imagine what a circus they could have had with "The Great Dictator"! The censorship wasn't uniform, and changed its ideas from time to time. For example, one of my films showed a temple gate with a Japanese lantern bearing the formal sixteen-petal chrysanthemum design of the Imperial family. It passed the censorship the first time, but was cut out of a copy that was made later. However, they didn't come back to ask about the first copy, so I still have the scene. The nightsoil cart picture I mentioned above passed the censorship, as apparently that had become so much a normal part of Japanese life that it was accepted without much thought as to its effect on a foreign audience.

For an amateur, there was a further step. To show a film in a school, church, or other semi-public place, not a theatre, it was necessary to have a special permit from the police, giving full particulars as to the film, the censorship number, the name of the projectionist, and many other bits of information. A diagram of the hall was required, with all windows and exits, and a diagram of the streets in the vicinity, and indications as to the points of the compass. If an admission was to be charged, that had to be given. After the performance, a further report had to be made, and the amusement tax paid. All in all, it was a bit discouraging to amateurs.

I got the above information the hard way.

One day I was asked by the principal of the International School in Yokohama, to show one of my pictures. This school was privately owned and operated by the resident foreigners, and had no connection with the Japanese school system. The picture was to be projected by my wife in the afternoon. She ran off the first reel, and when she tried to start on the second reel there was no current. She thought she had blown a fuse and that finished the show.

The next day the police came to me and requested that I come down to the station with the film, which I did. The film was taken away from me, and about two weeks later I was called to the procurator's office. The procurator is a combination of judge, jury, and prosecuting attorney. I was not allowed to use my translator, or have a lawyer. After some questioning, I admitted that I had projected the film without a permit, but pleaded ignorance of the law. So after signing a confession, and promising never to do such a thing again, I was dismissed and recovered the film.

Later it developed that the janitor of the school was one of the ultra-fanatics, and had pulled the switch on the show and reported to the police. The police knew there was nothing to the case, but didn't dare not to go through all the motions, as otherwise they would be open to accusation of favoring foreigners. The janitor got fired on charges of inefficiency as soon as the truth came out.

Now the peculiar part of this is, that I showed my films for years before the above incident in Japanese public schools, and in assemblies of foreigners, and then got caught. After that I had to insist on a police permit before a projection before any group. But the Tokyo amateur cinema club had long programs

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A big tin dishpan some wire and lamp sockets makes an excellent, wide angled floodlight at low cost

Lamps—Without Priorities!

By WILLIAM STULL, A.S.C.

THE way the Nation's War Effort must necessarily cut into the availability of cinematerial of all kinds is likely to prove an asset to the cine-gadgeteer. Of course "store-bought" equipment is and always will be more efficient than the home built variety but if your dealer's shelves are giving an imitation of Old Mother Hubbard's cupboard—well, just join the ranks of the gadget-builders, and you'll be surprised what workable equipment you can tinker up for yourself.

Take the matter of photographic lamps, for instance. Photoflood bulbs and similar high-power light sources are still comfortingly available, but the supply of lamps to use them in is dwindling as their manufacturers find they can better turn their men and machinery to turning out aircraft parts and similar wartime products. Yet we still need lamps to light our home-movie interiors. So let's make some for ourselves! All we'll need, in most cases, is some of the cast-off junk which collects around any household, a dime-store lamp-socket or two, and a good supply of ingenuity. For tools, a pair of tin-snips, a dime-store drill, and maybe a screwdriver and a pair of pliers.

Exhibit "A" in this discussion is a twin photoflood floodlighting unit which cinefilmer Bob Teorey of the Los Angeles 8mm Club built from kitchen cast-offs and the outlay of a whole nickel in cash. For reflectors (big enough to take a No. 1 Photoflood) he used a pair of worn-out, lightweight aluminum saucepans which had passed the days of their kitchen usefulness. (Maybe tin would be more patriotic today, what with aluminum needed for defense, but the principle's the same.)

Teorey cut a neat hole in each saucepan, at the spot where the handle originally joined. Into this hole, he screwed a metal lampshade-fitting—you know, the metal part that covers the 'works' of a lamp-socket—purchased for a nickel at the dime store. Into this fitting, he put a discarded, but still serviceable electric lamp-socket.

To the bottom of this fitting, he fixed a short length of gas-pipe, also culled from the salvage-bin. Being hollow, the tube permitted him to run the wire feeding his lamps down the middle of the gas-pipe.

Drilling suitable holes in the bottom ends of his two gas pipe arms, he mounted his lamps on a simple swivel-joint made from a bolt and a couple of bits of strap metal.

This, in turn, he mounted on a stand which, in his case, was salvaged from the supporting base of an old dress-maker's form. It could, of course, be made just as well from an old music-stand or, as I've sometimes done, by fitting a small metal block beneath the swivel-base, and drilling a ¼-inch, threaded hole in the block so the lamp can be supported by your second-best tripod.

So you want a spotlight? Well, Teorey made a very fair one out of a discarded coffee percolator and the lower half of a discarded double-boiler. The body of the lamp was made by cutting away the bottom of the percolator and fitting it into the double-boiler. The holes that took the handle-bolts on the original utensils can usually be lined up so they'll hold a bolt that will hold the two parts of the lamp together.

You'll need ventilation, so leave the hole in the percolator which originally took the upper bolt that held its handle, and snip off the spout from which the coffee was originally poured. Flat ten out this little piece of metal, and you'll have a flat piece which will make an excellent light-baffle when placed over the old pouring-opening, and held in place by bolts and small separating washers.

For a lens, remove the glass top of the percolator and substitute the plano-convex lens of an old flashlight, mounted curved-side out.

There are several ways of mounting the light-globe inside this spotlight. Teorey used a standard Photoflood, which he mounted endwise in the lamp. He attached his lamp-socket to a length of brass tubing—discarded curtain-rod, if I remember aright—which in turn passed out of the lamp through what was originally the bottom of the double boiler, moving through a set-screw collar soldered to the end of the lamp. He focused his lamp by sliding this rod in and out.

But using a Photoflood in a spotlight—*any* spotlight, home-made or "bought'n"—has one drawback. It gives a very soft beam; you can't make it give a sharply-defined circle of light. But you can rig a spotlight like this one to utilize a small, clear-globe lamp like those used in the "Dinky Inkie." This globe, as you probably know, is a standard 100 Watt or 150-Watt projection-type globe identical with those used in most miniature projectors. It takes a small, bayonet-type socket. And it isn't much trouble to get one of those sockets from, say, an auto-wrecking yard, they're identical with those used in headlights, etc., on many older-model cars. Fasten that to a wood or metal base, into which you can screw or solder the brass tube that moves your globe into and out of focus. In using a globe like this, by the way, it is important to line things up so the filament of the globe is held pretty well centered with respect to the center of your lens.

And with this, you'll have a fair, home-built "dinky." Of course, with the old type plano-convex lens, it won't be as efficient as a commercially-built "dinky" with its scientifically-designed

Fresnel lens, but it will work well enough, anyway.

If you want some extremely simple floodlights, save the tinfoil that (so far, at least) wraps your cigarettes, candy-bars and chewing-gum. It makes a fine reflecting surface.

Next, take a good-sized piece of medium-weight cardboard, and make your reflector. There are several ways to do this. If you cut out the cardboard in the shape of four truncated triangles—that is, triangles with their points cut off square across (as in sketch B)—you can make a square, tapered reflector. If you cut it as shown in the sketch, (A), you can curl it to make a cone-shaped reflector.

For that matter, you can cut the same shapes out of light sheet-metal—say tin—if you want a more permanent reflector.

Now, cement or glue your tinfoil, as flat and smooth as you can get it, on one side of the cardboard or tin that is to make up your reflector. Coat the other side with white enamel. Now, you'll have a double-purpose reflector. Used with the foil-covered surface inward, you'll have a reflector that casts a fairly strong beam. Used with the white-enameled surface in, you'll have a reflector that throws a much softer, flatter light.

If you use cardboard, you can fasten your reflector together with wire staples or with the split rivets used to fasten legal papers together. If you've made tin reflectors, you can bolt or even solder the segments together.

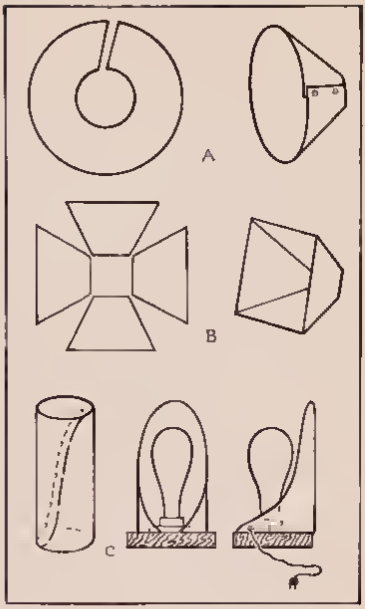
The smaller opening is of course fitted around an ordinary lamp-socket, in which you use a Photoflood bulb. You can attach simple clamps for mounting the lamp if you want to, or you can make a simple, wooden stand by fitting a wooden upright—say a 1x1—with four wooden braces at the bottom, either simple ones like those you used to hold the Christmas-tree upright, or triangles of plywood mounted one on each side of the upright. Screw your lamp socket to a short, wooden arm about 18 inches or two feet long, and drill a series of holes in the upright to which you can bolt the arm to get your lamp at any desired height.

There's one type of lamp which, though extremely useful in either professional or amateur interior lighting, just isn't commercially available at all. It is a small lamp which can be placed on the floor behind furniture, etc., to light up walls and the like. But you can easily make one. Rather, you can make yourself a pair of them.

The raw material is a large, tall can such as your wife buys tomato or pineapple-juice in. Cut one of these cans in two, as shown in the sketch, making a sort of S-shaped cut so that you get two pieces, each including one end and about half the sides of the can. For safety's sake, you'd better turn down the edges, so you won't cut your hand when you grab hurriedly at your lamp!

Then, mount this on a wooden base, a little bigger than the bottom of the can. Inside, mount a standard lamp-socket, and run the feed-wire out through a convenient, small hole low down at the rear of your reflector. This will give you a lamp, suitable for either a Photoflood or a projection-type bulb, which you can hide handily on the floor behind furniture, to light up walls, and produce separation between your set and the furniture or actors.

There's another type of lamp which



isn't available commercially, but which is very handy. You might call it a super-floodlamp. Often in filming interior scenes, especially on today's super-fast types of film, you'll want something to provide a fairly strong general lighting over a wide area without tying up the stronger, narrower-angled floods and spots you'll use for modelling and highlighting effects. I made a lamp of this type several years ago which, equipped with up to 6 Photofloods, will give a broad, even illumination of about the same intensity as a single Photoflood in a regular commercial reflector, but instead of concentrating this illumination in a relatively narrow angle of about 60 degrees or less, this spreads it over an angle of almost 150 degrees. With it, you can provide general lighting on a whole room, and use your other lamps to build up the desired intensity on your players.

The foundation of my lamp is a big, tin dishpan. When I made the lamp, getting that dishpan was about the hardest part of the job, tin wasn't in style, though I could get any number of big, expensive aluminum or enamelware ones. Today, tin kitchenware is very much in style again, with the object of conserving aluminum for the defense industries, so that part should be easier. You can suit yourself about dimensions; my dishpan is 17 inches in outside diameter, tapering to 14-inch diameter at the smaller end, and 6 inches deep. It cost me $1.35. There's room in it for six Photofloods—either No. 1's or No. 2's—without crowding and with ample ventilation.

These lamps are mounted in bakelite

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Cinefilmer Bob Tasray of the L. A. 8mm. Club made these floodlights (below) and this spotlight (above) from household junk.

Meet Laraine Day--Professional Cineamateur

By WILTON SCOTT

TO some people, the business of being a rising young film-actress means the relatively simple matter of knowing your lines and doing what the director tells you to, with no questions asked. But not to Laraine Day. She feels that to be a successful actress, she must know something, at least, of the *why* of all that goes on around her to put her image on the screen. Why the director tells her to play a scene thus and so—why the cinematographer employs this angle or that lamp—why the film-editor assembles the individual takes as he does. In short, the practical details of movie-making, as apart from movie-acting.

And being a smart girl, as well as an attractive one, she realizes that the answers to these questions don't come out of theory alone, but out of practice. Watching someone else do them in the studio isn't enough. Neither is asking questions.

So she has set out to learn the answer the hard—and lasting—way, by doing it all herself. A few months ago she bought herself a 16mm. camera, and, as she puts it, enrolled in the college of cinematic experience.

Now, a movie-star with a home-movie camera is no novelty in Hollywood. Plenty of them have them, and grind out occasional shots of the baby, or of tennis at Palm Springs and bathing at Malibu. But Laraine Day isn't that kind of a movie-maker. You may have fun turning out haphazard cine-snapshots, she reasons: but you're not likely to learn much from them that will help you when you step out in front of a big 35mm. camera on a studio stage.

So she has organized what might be called a cinematic "Little Theatre" group for the express purpose of seriously attacking the hardest kind of home-movie making: producing scenario pictures. "Creative Pictures, Inc.," her group is called, and they really make pictures. It's a democratic group, too. With Miss Day as Director-Cinematographer, the personnel of Creative Pictures, Inc., includes young men and women of every walk of studio life—there are secretaries, messenger-boys, prop men, aspiring young players—all bound together by a common interest in learning what makes movies move.

All told, there are thirteen "regular" members of the Creative Pictures group. They form the nucleus of a production staff which expands almost overnight to thirty or forty enthusiastic volunteers when a picture is in production.

Last summer they made their first picture, a comedy. "We took what we thought was the safe, conservative course," Miss Day will tell you. "That is, we chose a story that was all exteriors. But—it was a comedy, which is, we found, one of the hardest things a group of amateur actors and technicians can tackle. Especially when your picture is, as ours had to be, a silent picture.

"We're not very proud of that first attempt. But it taught us a lot about screen comedy—timing, tempo, and all the other things that are so important. And it showed us plenty of technical things we—and particularly I, as director-cameraman—had to learn before tackling our next picture.

"But we had a lot of fun making it, too. We had things organized as carefully as any studio location unit—organization is half the secret of doing a good job in any sort of amateur dramatic work, you know. We had certain people told off as a transportation unit; others as a wardrobe and prop staff; and others—they were the really important ones—as our commissary, to see to it our hungry filmsters were well supplied with a picnic lunch at noon!

"During the actual shooting, we all had to "double in brass," and do whatever was necessary. I guess in that it was a good deal like the early days of the professional movies, for sometimes when our actors weren't needed in a scene you'd find them holding a reflector or carrying the camera, or almost anything.

"As I've directed a number of 'Little Theatre' plays, I had the job of directing our picture, and photographing it, as well. That experience gave me a new respect for the few people who have had the courage to direct and photograph a professional picture! Each assignment—direction and photography—is really a full-time job. And as if that wasn't enough, in one scene we ran out of 'extras'—and the rest of the group pressed me into service in a 'walk-through' bit!"

When the picture was completed, "Cre-

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What Do We Mean When We Talk About "Effect-Lightings?"

By PHIL TANNURA, A.S.C.

I DON'T think anyone ever bothered to work out an exact definition of what a professional cinematographer means when he speaks about "effect-lightings." So it's no wonder home-movie enthusiasts often ask us if "effect-lightings" are something exclusively professional, or if they can be used shooting 16mm. and 8mm. interiors at home.

Certainly they can! What's more, they should be, for if you use them in their proper place they can do a great deal to make your interiors seem more natural, and take away the impression that somebody just set up a pair of lights and said, "Let's shoot a movie."

Just to get the record straight, my impression of the meaning of the term "effect-lightings" would run something like this: it's any type of lighting which attempts to reproduce the effect of the illumination you'd actually see in any particular room or place under the conditions of the story, as apart from the smooth, overall illumination of a conventional lighting.

That, you may say, covers a lot of territory—but so do effect-lightings! They can range from the most extreme and obvious instances like night-effect interiors in a mystery-story, where the room is in total darkness except for a beam of moonlight splashing through a window, to the rather less obvious effect-lightings which might reproduce, say, the effect you'd normally get in your living-room at night, with the illumination coming from one shaded lamp on the table and a reading-lamp by your pet armchair.

From the amateur's viewpoint, the really beautiful thing about this whole business of effect-lightings is that they can very easily be done with modern amateur cameras, film and equipment. You don't have to have a set-full of professional spotlights, and so on, though I'll admit a baby spot or a "dinky" or two helps. The one thing you really need is an eye capable of seeing the natural effects you want to reproduce.

Let's take that living-room shot I mentioned a minute ago. With the fast films, like Eastman's Super-XX and Agfa's Triple-S, available for 16mm. and 8mm. use today, it's a cinch to put a shot like that on your home screen. All you have to do is slip a Photoflood into the table-lamp and the reading lamp in place of the regular globes—and there you are. You'll get the same effect photographically that the regular globes gave you visually: a spot of bright light on the person beside each lamp, surrounded by a fairly bright glow of light, falling off into shadows in between. The difference is that the level of the lighting has simply been raised to useful photographic intensity.

Now, it's possible you may not want the shadows to go absolutely black and empty between these two highlight-areas. If that's the case, just take one (or, if it's a large room, two) of your photographic floodlighting units and put it fairly high and well back—possibly several feet behind the camera—so that it throws a soft flood of light all over your scene, lightening up those shadowed areas. You may sometimes have to use more than one of these "filler" lights, so that you'll get the desired exposure everywhere in the shadowed area. For safety's sake, it's probably best to take individual meter-readings on objects, not only in the highlight-area, but also in those shadow-areas, and adjust your "fill-in" illumination so that it's uniform, and also so that it is in correct ratio to the highlight-illumination.

Just what that correct ratio is depends on several factors, most important of which are your own preferences, and the characteristics of the film you use and the processing it receives, so the best way of determining it is by making a practical test or two. Begin with a lighting in which your meter tells you the shadows are getting, say, half the light the highlights receive. Then, keeping your highlight-illumination constant, make two or three further tests, each time reducing the "filler-light" illuminating the shadows a bit more. Once you've determined this ratio, it will hold good as long as you use the same type of film, but if you switch to another make or type of film, you'll probably find you'll have to repeat the tests, due to the differences in contrast, shadow-speed, and so on between different emulsions.

When a professional wants to make one of those extreme night-effect lightings in which the inside of the room is dark except for a beam of moonlight coming through a window, he usually sets up a big spotlight (an arc, if he can get it) outside the window. That's hardly practical for the average amateur. But you can often get a very similar result by letting a beam of real sunlight double for the spotlight. Expose for the people or things in that beam of direct sunlight, and keep the rest of the room fairly dark, and you'll get the "effect-lighting" you want. It often helps if you use a slow, rather contrasty type of film for this, so you won't find yourself getting exposure in the shadow areas where you don't want it.

Another simple type of effect-lighting is shown in the illustration. With the strongest illumination coming from the fireplace, it gives the illusion that the people were illuminated by a comfortable fire. Actually, of course, the source of light was a Photoflood, conveniently hidden in the fireplace, just out of the frame. If you want a flickery effect to simulate real firelight, a good idea is to get a low-based kerosene lamp, turn the wick fairly high, and burn it, with the chimney removed, directly in front of the Photoflood in the fireplace. Without its chimney, the lamp will give off a high, flickery flame, burning with quite a lot of smoke. Being in front of your real source of light, it will give you an excellent flickering effect.

Some kinds of effect-lightings can simplify photographic problems for you, and suggest something that didn't ac-

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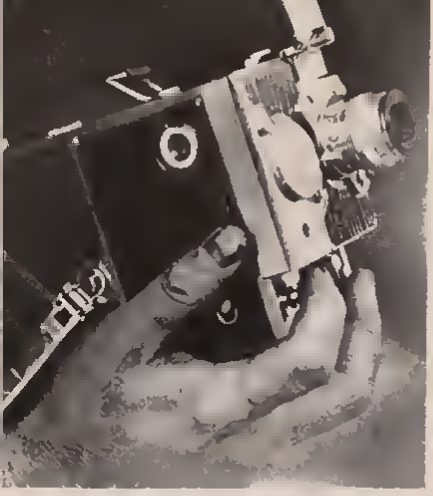

Getting Acquainted With Your New Camera

By ALVIN WYCKOFF, A.S.C., D. Sc

He held the lucky number! He won the prize!

The thing had fascinated him. It had been in his dreams at night disturbing his rest. During the day he turned a deaf ear to the silent voice that kept giving life to the hope that the number he held would be the winning one.

The announcer for the great Olympic Club drawing was calling the name of the winner of the Christmas contest and awarding the prize.

There it was, posted across the bulletin board in great black letters that smiled at him; his own name. Now he could hear it coming out of the loudspeaker as the announcer's voice blared it out loudly. Joe was embarrassed. Heads turned to look at him as the announcer hailed him. "Come up and get it Joe." Then there was a lot of handshaking. Joe began to feel what it was like to be the winner of a Cine-Kodak Special, complete with tripod, three lenses, cases, and all the accessories.

Since he graduated, two years back, he had been holding down a small job that paid just enough to get him over the "humps" with a little change to play with. Since the early days of Grammar-school, photography had been his absorbing hobby. Now, that hobby was to germinate and grow into an avocation. Perhaps later—well, who knows?

While he was in Junior High, he had managed to get together enough money to purchase a small 16mm. camera at an auction; before he could make pictures with it, he had to start saving for money enough to get it repaired. By the time he was able to use it, it had become rather an expensive camera. However, he battled along with it, applying his analytical mind to the study of its possibilities, and its limitations, with the result that when he started to make pictures, he knew his camera. The subjects he made were of a documentary kind, a visual explanation of an important class subject, and he, likewise, became popular as the "Movie Professor."

Encouraged, he commenced to lay aside small sums of change toward the purchase of a better camera, one not so limited in its application, and with which his growing knowledge and interest could expand with better results. He knew what he wanted, it was pictured in his mind 'till it tormented him, at times. Now he had it. He held it in his arms, almost afraid to touch it. Dame Fortune had not only knocked at his door, she had opened it wide!

He was interrupted; jarred out of his vision-dream by the voice of Bill Haskins. Genial Bill, he was called by his friends, was saying things to him he had not heard; now he listened.

"Well Joe," said Bill. "That's a beauty, isn't it? Now, you can make real moving pictures! S'pose you'll ditch the old box that's carried along the beginning of your photographic career?"

Joe looked up, his face beaming with real joy. "Hello Bill. Gee, but I'm a lucky guy! Guess I'll have to learn all over again. These gadgets 'n things, focusing lenses, fade out and dissolve lever, tripod with a panoram and tilt head!" Joe picked up the old camera, worn and dull. He looked at it affectionately. "No Bill. I'll not throw it away, I'll keep it. Maybe use it for testing. You see Bill, this old box has been a companion on a lot of joy-occasions—sometimes a headache too, but it'll be good to experiment with." Putting it down on the bench, he lifted the new camera out of its case, tenderly. "It's a beauty all right; now if I can only use it correctly—"

"Joe," broke in Bill. "Remember when you asked me to show you what it was that made the wheels go 'round in the old camera? Well, that first camera of yours was just as much a mystery to you then, yes, I'll say more of a mystery, than this new camera with all its accessories."

For a moment, Joe's expression was blank. He didn't want to contradict Bill, he relied on him, his advice had always been good, and Bill had taught him what he knew of the basic principles of photography. He had taken many hours out of his time to demonstrate the principles he advanced. Bill was a professional cinematographer, what they called an "Ace Cameraman," he made his living through his knowledge of his profession, he should know. Joe always turned to Bill when he didn't feel secure in his own amateur-cine knowledge, and he did it now when he said:

"Bill, I realize there is much more to this camera than the fixed-focus box I've been working with; its set shutter opening, set speed, and small lens-aperature. This new camera is the first violin of the orchestra, not just a whistle of one note. I know I'll not be confined to just a few hours of bright daylight for operating time as I have been. With this new camera I'm going to be able to go places and do things, that is, after I know the camera."

"Right." Bill became almost affectionately confidential. "Joe, with this new camera you can produce photographic results equal to those of scientific professionals, but you're going to have to study, a lot of study and research by yourself. Your problems are your own. The answers to them will have to come out of your own mind. According to the study and research you put into the thing you want to accomplish, will be the degree of your proficiency. The results you can achieve? The sky's the limit!"

Joe got serious. The dazed expression had faded away. "You know what I'm goin' t' do Bill?" Now it was Joe who was confidential. "Bill, I'm not goin' t' try t' make a picture with this camera until I have sat down with it, lived with it, for a month, or longer if need be, getting acquainted with all its features, till I know what every button, every dial and lever, and all the marks are for, and what happens when they are manipulated. And the lenses! Look at this one, *f*/1.9. Why, I can almost make pictures in the dark with some fast film behind it! Isn't that a beautiful piece of jewel-glass? And look at these other two lenses—"

"Yes," interrupted Bill, "A wide angle, and a three-inch telephoto. With that telephoto, like Mohammed, you can bring the mountain to you. Joe, when these lenses need cleaning, for the love of Mike, don't breathe on 'em and then rub 'em with a piece of cloth, or the end of your necktie. Many fine lenses have been ruined that way. Never blow your breath on a lens to clean it! Use the

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Professional Advice On Making Films Easy To Edit

By HAL HALL

Former Editor, American Cinematographer ' and
film editor on many professional and amateur travel films

ABOUT a year ago a man came to me and asked me to edit approximately five thousand feet of 16mm film he had shot in a foreign country He explained that he wanted it prepared as a lecture-film; that he planned a two-hour lecture and wanted the film edited to run that length

Quite naturally, before I could either quote him a price or decide whether or not to do the job I had to see it on the screen. I'll never forget the feeling of sadness that surged through me when the last foot had been run and the man turned to me and asked me what I thought of it

You see, this man had explained to me that he had quit his job in California, had used up all his savings and spent a year traveling and shooting the film He was back, practically broke, and had found visions of becoming both famous and financially well-off by using it on a lecture tour This man was just a rank amateur movie maker, and that was what he had brought back after a year of hard work He had brought back five thousand feet of the same type of stuff that all too many of our ardent home-movie makers bring when they return from the annual vacation or a trip to foreign lands

Of course, I had to tell him that his stuff was terrible I can't forget the look on his face when I told him that I couldn't take his money on an editing job on that material He was just about the sickest-looking individual you can possibly imagine His money gone, a year of effort wasted And all because he made the same mistakes most of our amateurs make. The only difference was that this man wouldn't be showing his stuff to a lot of bored visitors, but the amateurs would Yes, sir, to every guest who came to their house Tell me, if you can, what can be worse than having to sit politely for two hours and look at pictures that are so bad they make you want to scream?

The editor has asked me to relate, from my editing experience, some of the most glaring mistakes amateurs generally make when shooting travel film That is why I started out by telling of the man who made a lecture-film that couldn't be saved I'll tell you some of the things he did and didn't do, with the hope that some of you may profit by his mistakes.

In the first place, practically ninety percent of the material he photographed which might have been good subject-matter was shot at such a distance that you wouldn't know what it was unless he was on hand to say:

"Away in the background there is a machine-gun. Those specks behind it are the machine gun crew They were really very effective in the matter of defense When the enemy met them he knew he had met something."

But, dear reader, motion pictures are supposed to be visual things The man had neglected to get close and interesting shots of the machine gun and its crew, although he explained that he had permission to do anything he wanted He just thought it was exciting to see the gun in the distance as he was filming, but he never thought to move up and get something an audience could see

That's what a lot of amateur movie makers do on the summer vacation They drive along the country road, for example, and see some farmers loading hay in the hayfield They sit in the car, turn the lens in the general direction of the hayfield, and shoot an agonizingly long amount of indistinct long-shot footage. When they get home their friends will see a title flash on the screen saying: "Haying," and then they will squint and try to see how haying is done, while the enthusiastic maker of this masterpiece will try to explain

If the amateur would shoot his long-shot, then get out of the car, climb the fence and really go to work making close shots of the interesting work from various angles he would come out with an interesting little sequence that would really mean something.

The man who made the lecture-film had hundreds of feet showing bombing planes flying thousands of feet in the air They were so high they were merely specks on the screen He explained they were flying to bomb a city. Following this he had some scenes of a town after the bombs had hit But there were no scenes of the bombing There weren't even scenes of people digging in the rubble No action When I asked him where were the scenes showing the bombs falling, houses crashing to the ground, etc, he rather blankly remarked that he had not made those

Amateurs, please, please, get action, and get it as close as possible I saw a 16mm picture not so long ago of the tearing down of a high smoke stack The amateur had made nice close-ups of the men putting dynamite in chinks at the base of the stack He then showed a long shot of the stack And next he showed a closeup of the mass of bricks after the stack had fallen But he had been so excited when the dynamite went off that he forgot to make the really interesting part of the picture—the crashing of the stack!

Top a long shot like this may be pictorial but it doesn't tell you much about the Army's combat cars Middle a closer shot like this is better Bottom But it takes a close-up like this to put over the punch! Top photo by John L Hermann A.S.C., F.R.P.S. F.R.S.A. lower photos official photos U. S. Army

I was editing some film that a wealthy amateur had made in Africa some time ago It was supposed to be in the elephant country It was, but all the elephants were so far away they looked like blotches In order to make the stuff presentable to his friends we had to go out and buy some stock—shots of elephants close enough so you could tell they were elephants

Another very general error is that amateurs forget when they are photographing moving objects, such as parades, and the like, that the objects should continue to move in the same direction I mean if you see the men in a parade marching by heading to your right that is the way you should make

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AMONG THE MOVIE CLUBS

Blackouts

We notice with regret that practice blackouts and the generally unsettled conditions following America's sudden entry into the war seems to have blacked out the regular December meetings of a number of amateur movie clubs from coast to coast. We hope this cessation of activity is only temporary, for continued activity on the part of America's movie clubs can serve two valuable purposes. First of all, we need the relaxation a hobby like movie-making can provide, if we are each to carry on at his best under wartime strains. Second, and no less important, America's organized movie amateurs can serve their country importantly in many ways. Among them are such projects as aiding in the exhibition of government-made Civilian Defense Films, the production, in cooperation with local and national authorities, of such films, specifically adapted to suit local needs; and public showing of outstanding amateur-made films as a means of raising funds for the U.S.O., the Red Cross, and similar patriotic organizations.

In this latter connection, THE AMERICAN CINEMATOGRAPHER gladly offers to any Amateur Movie Club the use of any of its extensive library of International Prize-Winning 16 mm. and 8 mm. films, waiving the usual restriction that these films may not be exhibited for paid admission, in any case where the proceeds are devoted to raising money for any of these patriotic funds.

It is worth noting that in England, where blackouts and wartime precautions are the real thing, Amateur Cine Clubs and Societies are carrying on in spite of the war. The December issue of "Amateur Cine World," just received, publishes a list of nearly two dozen such groups reporting activity, and further states that the Federation of Cinematograph Societies reports a full list of film-bookings up to April, 1942, and that the Institute of Amateur Cinematographers is reviving its annual Contest and also its film-production unit.

If England can do it, America's amateurs certainly can, too—so CARRY ON AMERICA!

Sound In Philadelphia

The December meeting of the Philadelphia Cinema Club featured two sound-on-film pictures made by members of the Club. "Paradise," by Member Robert Henderson covered a number of nationally-famous processions, featuring the bands and especially the drum majorettes. Member Leon Bardfield showed the difficulties of making and showing home movies through the medium of sound. Both films were of interest because of the development of amateur movie sound effects and showed considerable progress with non professional apparatus.

Mr. and Mrs. Francis M. Hirst showed two 8 mm. Kodachrome films, one on "Yellowstone Park," and the other on "Glacier National Park." Both were very finely done, with a keen appreciation of composition, lighting and subject-matter. In addition to the usual views of geysers, falls, canyons and mountains associated with the Northwest, Mr. Hirst was successful in securing some rare pictures of animal and plant life and some very interesting and intimate close-ups of Blackfoot Indians in Montana.

B. N. LEVENE, President

Contest In Indianapolis

The December 17th meeting of the Indianapolis Amateur Movie Club was the announcement of the results of the Club's Annual Contest. Winner in the Scenario Division was "Lathe Project," (180 feet 8 mm., black and white) filmed by J. W. Sovine. In the Documentary Division, "Meridian Hills Activities," (320 feet 16 mm. Kodachrome) took first honors. Judging was done by the Editor of THE AMERICAN CINEMATOGRAPHER and the Officers of the Los Angeles 8 mm. Club, who gave "Lathe Project" a score of 83.7 out of a possible 100%, and "Meridian Hills Activities," 82.7. The runners-up were, in the Scenario Division, "Photographers' Model," (125 feet black and white 8 mm.) by C. E. Luethge (63.8), and "Repousse Work," (100 feet 8 mm. black and white) by J. E. Willenborg (72.8) among the Documentaries.

ELMER M. CULBERTSON, President

L. A. Cinema Elects

The December meeting of the Los Angeles Cinema Club featured the Club's Annual Election of Officers, and also the Annual Contest. Officers for the Club's 1942 Season are: A. A. Anderson, President; Jacques Shandler, Vice President; and Raymond B. McMillan, Secretary-Treasurer. Committees will be announced at the January meetings.

The Club's Annual Contest brought out a greater number of excellent films than any Contest the Club has held in a number of years. Winners were, Returing President William Hight, First Prize; Guy Nelli, Second Prize; and Earl Memory, Third Prize. Additional Awards went to more than a dozen other contenders, some of whom had entered films which, like Fred Ellis remarkable film on the praying mantis, were so completely away from the usual run of movies that they richly deserved special classification and Awards.

JACQUES SHANDLER, Secretary

Utah Amateur Club

Highlights of the December meeting of the Utah Amateur Movie Club included a demonstration-talk on Titling by F. K. Fullmer, the ever-popular "I Have a Problem" question-and-answer session by members of the Club's Technical and Advisory Committee, the screening of member C. A. Thomas' 1940 Contest film, and, as the feature of the evening, the Western Premiere of "Minnie's Mince Pie," furnished through the courtesy of the Gopher Movie Club of Minneapolis.

The Club has completed plans for its Annual Contest, to be held at the Club's March meeting. Three Divisions are contemplated: Class "A," Class "B," and a special division for Musical Films. Each Division is to be judged separately, by outstanding judges outside the Club. February 1st is set as the deadline for entries.

TED GUERTS, Secretary

San Francisco Dines, Nominates

Scheduled for the December meeting of the Cinema Club of San Francisco was the Club's Annual Banquet. Screen entertainment was to include two outstanding films by Allyn Thatcher. One was "Ice Follies," which won the recent "Ice Follies" Contest, and the second one, "Summer Vacation." Both are in 16 mm. Kodachrome, with sound-on-disc.

The Club's Nominating Committee announced the following slate of nominees for the Clubs 1942 officers. For President, Rudy Arfstein; for Vice President, Anthony Kleyn; for Secretary, Mrs. John Seitz; for Treasurer, Fred Youngberg, for Directors (three to be chosen) Dave Redfield, John Smurr; L. J. Duggan; Fred Wells and L. M. Perrin.

JOHN B. SMURR, President

Tri-City Banquets

The Tri-City Cinema Club of Rock Island and Moline, Illinois, and Davenport, Iowa, held a Banquet meeting December 15th. President Raymond Schmidt acted as toastmaster, and several members recited amusing or interesting camera-experiences. Program-Committee Chairman Tom Griberg prepared special Club End-titles in Kodachrome, and distributed them to the members.

Member John Hoffman of Moline, filmed the banquet in Kodachrome, making a series of shots of the guests—more than seventy in number—seated at the various tables. The evening was a great success.

GEORGIA T. FIRST, Secretary

SHOES

Scenario-travelogue, 200 feet 8mm. Kodachrome.
Filmed by **John E. Walter.**

One of the chief weaknesses of most home-movie travelogues is that while they may be long on scenery, they're short on story-interest But here's one which cleverly combines a thread of story with excellent scenic photography. And, for added measure, the story is cleverly humorous—one of those "it happens in every home" affairs.

The film itself is a record of a three-day Fourth-of-July holiday trip to the mountains For story-interest, cine-filmer Walter didn't content himself with mere occasional haphazard shots of himself and his wife walking through the scenery Instead, he opens the picture with the two deciding where they'll spend their holiday, closing the sequence with the wife's announcement that on the trip she'll wear her new sport sandals

The rest of the film deals with the inevitable sorrows of wearing openwork shoes on a hiking-trip. Walter gives us plenty of very excellently-photographed scenery—some shots showing extremely high pictorial ability; but he dishes his scenery out in small portions, so that before any scenic sequence has a chance to become boring, it is supplanted by another, natural story-sequence, culminating finally in a deftly surprising "O. Henry twist."

In making the scenic shots, Walter has dared to use his camera at times when the rule-book would pronounce it taboo. He's filmed campfires, excellently impressionistic low-key shots of a campfire smoke rising through the trees, backlit effects on whitewater rivers and steaming falls, and occasional shots made late in the day, with very pictorial, long shadows.

Our only suggestions would be that he could have saved footage by cutting some of his spoken titles into the middle of the close-ups showing the character speaking, and that in one instance —where he has two titles reading "We pitched our tent—" "—and loafed around the campfire" he let too much footage elapse between the two titles The scenes showing the pair returning from the hike also came unexpectedly, as there had been nothing previous to indicate they'd started their return

OUR HERO

Scenario, 200 feet 8mm black-and-white.
Filmed by **L. B. Reed.**

This is a surprisingly amusing little comedy, filmed by the members of a Naval Reserve Aviation Squadron Detailing the adventures of a more or less intrepid explorer who finds he can't be a hero in Africa, and joins the Navy, the film is considerably better than the average amateur comedy, and in some ways reminiscent of the professional Abbott and Costello films

There's a sequence which makes clever use of professional camera-tricks when the bandy-legged hero, after deciding he's too exhausted to scale a high cliff, suddenly sees a lion—and changes his mind. The lion is cleverly cut in by means of a shot made in San Diego's famous barless zoo We'd suggest, however, that this scene would be more effective perhaps if cut in ahead of the scene in which the hero "does a take" and his topee flies off

Some of the scenes, especially in the middle and latter sequences of the film, seemed a bit on the underexposed side But when you consider the circumstances of the film's making, and the laughable results achieved, this hardly ranks as a major flaw.

PHOTOGRAPHER'S MODEL

Scenario Film, 125 feet 8mm black-and-white.
Filmed by **C. E. Luethge.**

This is a praiseworthy attempt at a family scenario picture, and misses fire largely because of technical limitations in film and subject-matter of a key sequence, and by unsure handling of the titles As a story of a day's work for a little girl who poses for commercial photographers, the idea and basic treatment of the picture is clever, and a bit out of the ordinary. However, too much footage is devoted to showing the photographer at work in his studio, and because of the disparity in speed between the 8mm. film and the film in the still-man's camera, practically all of this footage is lost in underexposure, so that it seems repetitious and unintelligible Now that a much faster 8mm film is available, however, this sequence could easily be remade, and the picture improved 100%.

The titling was rather awkward. A picture like this needs spoken titles; none were used here. And such titles as were used, were rather dull, explanatory ones, and incorrectly cut into the picture Sometimes there was a definite repetition between an explanatory title and pictured action which really told the same story. For example, there is a title giving the name of the still-photographer's studio. This is followed by a shot of little Betty and her mother driving up to the studio, with the camera panning over to the studio's name-plate In this instance, the title could have been eliminated. It would, also, have been better to handle the action this way: Close-up of the studio's name-plate, then pan over and down to show either the car driving up and mother and daughter entering, or merely the two people entering the door, leaving the audience (which has already seen them drive from home in the car) to assume they had already parked the auto

In the same way, the title at the end of the picture, referring to the advertisement in which the girl's picture appeared, could have been eliminated. It would have been much better to cut quickly from the scene in which the mother sees it in the paper and calls the girl, to an insert of the ad itself. Similarly, early in the picture the title "Studio call," could have been replaced by a spoken title (set off in quotation-marks) making the mother say, "Yes, I'll have Betty at the studio at 2:30 this afternoon"

THE MAGIC CLOSET

Scenario; 125 feet 8mm. Black-and-white.
Filmed by **W. D. Garlock.**

The story of this diverting little picture is told by its opening and closing titles "Once upon a time was a man who had a movie camera. And he also had a wife—" and "What's sauce for the goose is applesauce for the gander" In between are 125 feet of comedy action sure to strike a responsive note in the heart of any married man who owns a camera.

The technical treatment is excellent Garlock's lightings are unusually effective, and convey much more of an impression of naturalness than is the case with most home-movie interiors His continuity and editing, not to mention the acting of his players, are excellent

We might suggest, however, that the "punch" of the picture would be stronger if he could show, early in the picture, a shot of the inside of the closet, showing it crammed with the husband's photographic equipment. This could be cut in either at the time he places his mysterious package there, or when, later, his wife finds it Also, while the pantomime is clear, and there are a fair number of spoken titles, a few more titles would help the picture quite a bit

REPOUSSE WORK

Documentary, 100 feet 8mm black-and-white.
Filmed by **J. E. Willenborg.**

The filmer here had a subject definitely out of the ordinary, and has filmed it quite well. But he needs considerably more explanatory titles to make the meaning really clear. He gets into his picture rather too suddenly most people don't know what repousse work is in the first place this should certainly be established at the outset. Thereafter, more titles should be used, to make each step clearer Some of the footage seems

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HERE'S HOW

Making Fades

On interior scenes, I make fade-outs by stopping down the lens of my camera as far as I can. But on exteriors, I can't do it, because my lens won't close completely, and I can't get my fade-out to go completely "out." How can I get around this difficulty?

William H. Morrison

The simplest way to do it would be to use a fading-glass or one of the automatic or semi-automatic fading gadgets like the Harrison "Rotofade." However, if you can't do this, we'd suggest that you get a 100 Neutral Density filter. This is a colorless, neutral gray, and does not change the color rendition of your scene, so it can be used with either black-and-white or Kodachrome. Its factor, for all types of film, is 10. Shooting outdoors with this filter on your lens you will have to increase the exposure 10 times to get a normally-exposed picture. If you're shooting in an *f* 16 light, you'll have to open up to *f* 5, if it's an *f* 8 light, you'll have to open up to *f* 2.5. This will give you plenty of latitude to make a lens fade-out, even though your lens won't close completely.

Diffusion

I'd like to reproduce in my own movies some of the slightly diffused effects I see in professional pictures. Can this be done in 16mm?

F. R. Benson

You can use diffusion in either 16mm or 8mm as well as you can in 35mm, with one difference—your diffusion in either of the substandard sizes must be a great deal more delicate than in 35mm filming, if the picture on the screen isn't to appear badly "fuzzed." A bit of extremely fine, black lace netting, or even a piece clipped from a very sheer silk hosiery, can be used for some diffusion effects. If you want to use commercially-available diffusion filters, we'd recommend for substandard camerawork something on the order of the Scheibe diffusing filters No. 1/128 or No. 1/256.

Double-exposures

Can I make some double-exposure titles, with a moving background behind my title-lettering, with my 8mm. camera? I haven't got a wind-back.

Ralph Schirk

We haven't a wind-back on our own 8, but we've made plenty of double-exposed titles, and made them very easily. Our method is this: shoot the background scenes first, making a careful note of the starting-point where you loaded your camera, the amount of leader run off, and the footage of each scene. When this sequence is completed, expose the rest of your roll in the usual manner. On double-run 8mm. film, this gets your film back onto the original spool with the original starting-point out. Now, thread the same roll of film into your camera, and get the marked starting-point to the same place (usually the aperture or directly above it) that it occupied on your first take. Then run off the same footage of leader your notes show you you did before. Now, you're at the starting-point of your first background scene. Shoot the title lettering that should go over that background, exposing the same footage as when you filmed the background. Then shoot the next title, and so on. When you've finished the title-sequence, put the lens-cap on your camera, and run the rest of the film through, preferably twice, so the roll is again "heads out," and the people at the processing-plant won't return it to you thinking maybe you've only exposed half the roll. That's all there is to it: if you balance your two exposures correctly, and keep accurate track of the footage on both takes, you should have perfect double exposed titles. If you want a little leeway, you can fade your titles in a few seconds after the start of the background-scene, and fade them out similarly a few seconds before the background take ends. For your title-lettering, always use a black card with white letters, and split your total exposure between the two takes.

Finder Parallax

Although I frame my scenes carefully in the finder, I notice that whenever I make close shots, I seem to cut off the tops of my subjects' heads. What's the matter?

Hal Petersen

The cause of this trouble is what is called "finder parallax." It is caused by the fact that your finder and your lens necessarily are spaced a little distance apart. When you are shooting a close shot, your finder naturally can't cover precisely the same field your lens does. Since you are cutting off the tops of people's heads, it is evident your finder is placed above the lens; if it were at the side, you would find in close shots you'd have too little room at one side of the picture, and much too much at the other. The remedy is to make allowance for this difference in lens and finder viewpoints when you shoot close scenes. You can do it mentally, if you like. Some cameras have a pointer or a scribed line to indicate what you should take as the correct top-line (or side line) for framing shots under 6 feet from the camera. With a little experimenting, you can make such an indicator on your finder if you wish. Another remedy is to use an alignment gauge, of which several types are commercially available for the different types of cameras, so that you can swing your camera into a lining-up position in which the finder occupies precisely the position occupied by the lens in shooting position, and shows the same field. After lining up, you can swing the camera into shooting position, and film your scene, disregarding the image you see in the finder so long as you don't have to pan or tilt your camera.

Are Titles Necessary?

I believe that a good motion picture doesn't need titles—that the camera should tell the whole story without the intrusion of printed words. Some of the other members of our movie club believe otherwise, and argue my pictures ought to be titled. Can you settle the argument?

H. T. Winterton

You're both partly right. A really perfect silent picture would be one in which the camera told the story so perfectly there wasn't any need for titles, but it is almost impossible to make a picture that perfect. In all the years the industry made silent movies, we can recall only *one* picture—"The Last Laugh," photographed many years ago by Karl Freund, A.S.C.—which was successful without any titles other than the opening and closing ones. Even it would have been clearer had titles been used at one or two points.

You can easily settle the argument yourselves. Take one of your untitled pictures and show it to a group who have never seen it before, and who are preferably not familiar with its subject-matter. Note down every time you have to say something to explain what's on the screen, or when someone in the audience asks a question about it. Your picture will need titles at those spots, giving that particular information.

Cellophane For Filters

Recently in "Here's How" you mentioned using gelatin filters. This makes me wonder if I could not get the same effect by using a sheet of colored cellophane over my lens. Is this possible?

R. K. Parker

It is possible, but we do not advise it except as an emergency measure. The colors in the better types of commercially-available photographic filters are scientifically compounded so they will absorb certain bands of the spectrum, and transmit others. You know, therefore, that a given filter will have a definite and predictable effect on a given film. Most important, you know precisely what its exposure-multiplying factor will be when used with a given film. Using colored cellophane, you have no exact information upon which to go. exposure-factors and color-correction can be determined only by tests. Also, remember that visual appearance is not necessarily any criterion of photographic effect: just because a piece of red cellophane looks to be about the color of a 23-A filter doesn't imply that its photographic color-transmission characteristics are anything like that of a 23 A; you might find, on measuring it with a spectroscope, that it actually has less photographic value than the visually much lighter, orange-toned "G" filter.

Remember, also, that a good photographic filter is made of either colored

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Get Acquainted With Your Camera

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best lens-cleaner you can buy and the softest lens-tissue.

"You've got the right idea about knowing your camera. Before you put film in it, set it up and get acquainted with it. Operate it without film until you can make it work almost without thinking of the mechanics of what you're doing; very much as you drive your automobile. Be thoroughly familiar with every feature of it. When you can do that, you can concentrate on the subject you want to produce, whether it be black-and-white or color, artificial light or natural light. With this camera, and the many grades of film, from low to extreme sensitivity, to choose from, you can photograph 'Around the clock.'

"Unlike your old camera with one set speed, and fixed shutter, this new one has five speeds as well as a "One-stop." With all those speed controls, and different grades of film, together with a variable shutter, and fast lenses, you've got the world by the tail photographically. Its wonderful to contemplate what you can achieve with such a camera.

"You made some real decent pictures with the old camera, considering its limitations. Now, as you have said, 'You can go places.' But where you went around with the old one in your hand, or found a solid base to set it on, you're going to use a tripod with this new one. Occasionally, when the right moment calls for it, you'll shoot this one from the hand too. But the better pictures, the professional ones, are shot from a tripod; that's why they're rock-steady.

"You're going to have to fight that urge to make panoram shots too. That panoram and tilt top invites a lot of troublesome pictures for your audience if you don't keep it under control. Many times, what could have been good pictures, have been almost ruined by too much waving around of the camera. There is rarely anything artistic, or good, to come out of a panoram shot; seldom does it improve the subject. The purpose of the panoram, mainly, is to follow some kind of important action close up, and then it must be done so expertly that the audience is unaware of the technique, the same applies to tilting too.

"There must always be a good reason for everything you put into a picture. Every action, effect, and sequence should be closely related. Don't use anything that doesn't help advance the story you are trying to tell. Plain, straight, sharp photography will leave a better impression in the mind of the observer than a lot of meaningless, disturbing effects. Good long-shots to introduce the locale, jumping into a closer interest of the scene with a normal, closer view, picking out the vital interest of the same scene with a good closeup, will always tell a good story convincingly. A good steady picture on the screen is a mark of the master cinematographer.

"With the five speeds your technique widens. There are many advantages, to you, in those speed controls, through which you can devise intimate interest for your picture. For instance, with the "One-stop" you can interestingly reproduce the opening of a flower bud to the richness of its full bloom, either in black-and-white or color. Then there are the animated cartoons, titles and maps, insects that fill the screen, and no end of things that will make really unusual pictures.

"The 'high speed' will let you slow down rapid motion to a rhythmic, liquid flowing motion of beautiful effect, or the study of driving a golf ball, diving, jumping horses, moving machinery, etc. With the combination of the telephoto, or long focus lens, and 'high-speed,' the fast-moving parts of delicate machinery can be enlarged to fill the screen in slow-motion movement for intimate study. The 'Low-speed' is just the reverse, and many mirthful comedy stunts can be produced that will break the monotony of a serious sequence."

"Wait a minute, Bill" Joe was getting bogged down with so much to assimilate all at once, not that Joe was slow in grasping and stowing away knowledge, but because he wanted to take things in a steady stride, one step at a time. He was putting things back into the cases. "Let's go out and get a sandwich. Waiting for this drawing, and the excitement, has made me hungry. What d' you say we get together Sunday and you point all these things out to me. By that time I'll have absorbed some of the talk we've just had."

"All right, Joe, but take it easy. You've been a winner! Keep on being one! Here, let me help you carry some of those cases. You carry the camera. Give me the tripod. Come on'" END

Photography of the Month

(Continued from Page 19)

the screen, where the audience's attention must be concentrated for an hour and a half within the confines of a relatively small rectangle, such sets are distracting. In fully two thirds of the scenes, the settings, like an irresistable magnet, drew attention from the players to the background, much to the injury of the film's entertainment value. We'll wager that both Director Irving Cummings and the cinematographers would have had an easier task, and turned out better work, with less gaudy settings to compete with.

UNHOLY PARTNERS

Metro-Goldwyn-Mayer Production.
Director of Photography: **George S. Barnes, A.S.C.**

"Unholy Partners" is the sort of picture which lends itself ideally to the modern technique of stopping down for increased depth. George Barnes, A.S.C., again shows himself a master of this style of camerawork. His use of it must inevitably have been carefully planned, but the results on the screen seem so easily natural the average audience is likely to overlook the real skill that went to bringing these scenes to the screen.

Some of these shots appear to have been obtained through very effective use of the wide-angle lens, as, for instance, the very interesting angle-shot made apparently from slightly above the surface of the crap-table in the dice-game sequence. In others, the distorted perspective of such lenses detracts a bit from the perfection of the scene, and at times there seems a definite lack of roundness, especially in the background. His skill in composition for this increased-depth technique is, however, eminently well worth the study of any cinematographer.

A melodrama, the film naturally gives Barnes full opportunity to display his skill with effect-lightings. In these, he combines pictorial effectiveness and naturalness to an unusually high degree. His treatment of the players—especially Laraine Day and Marsha Hunt—is well up to his usual standard. The montage effects, especially those showing the growth of Edward G. Robinson's tabloid newspaper through its headlines and stock-shots of well-remembered news thrills of the 1920's, are another noteworthy point in the picture. Some of the process-work, especially the scene in the office of the sports-promoter, appeared definitely inferior to the rest of the production.

THE SHANGHAI GESTURE

Arnold Pressburger Production, United Artists Release.
Directed by **Josef von Sternberg, A.S.C.,** Director of Photography **Paul Ivano, A.S.C.**

It goes without saying that any production with which Josef von Sternberg, A.S.C., is connected will be a photographically outstanding production, for von Sternberg, in addition to being a great director, is one of the world's greatest cinematographers. "The Shanghai Gesture" is no exception. It is most interestingly photographed by the Ivano-von Sternberg combination.

The opening sequence is softly effective, excellently planting the Shanghai atmosphere. With the following sequence, which introduces the gambling-house locale, the photography takes an abrupt transition, changing to a mood of crisp brilliance which excellently matches the diamond-hard atmosphere of the locale.

It is in the climaxing sequence of the New Year's banquet that the camera work really tells, however. Much of the pivotal action of this sequence is told in a series of close-ups of the principals. Von Sternberg and Ivano have made these close-ups some of the most forceful ever screened, yet without any intrusively obvious straining for pictorial effect. It is without doubt one of the finest examples of mood-photography we've ever seen.

Here's How

(Continued from Page 30)

glass or a sheet of dyed gelatin sandwiched between two pieces of glass In either case, the filter is optically flat, and does not harm the definition of your image as a sheet of wrinkly cellophane might. Gelatin filters, when used professionally, are held flat in a metal frame. On all counts, we'd advise using the cellophane for wrapping, and sticking to the regular filters for photographic use

Home Movie Previews

(Continued from Page 29)

repetitious, as it shows the craftsman interminably hammering at the metal. Some of this footage, if it can't be explained in titles, could well be eliminated. This is especially so in the case of some scenes, in which the exposure could have been improved considerably. The picture ends rather too abruptly we see the finished work compared with the artist's original free-hand sketch, but get no idea of where or how the piece is ultimately to be used. A few scenes showing this, if possible, would end the picture much more smoothly.

Easy to Edit

(Continued from Page 27)

all your scenes Then when you edit them and throw them on the screen the parade will go marching by just as you saw it, and just as it actually was. But many amateurs duck around and shoot them going to the right in some scenes, to the left in others, with the result that when the sequence reaches the screen you see the marchers going by you to your right and then, all of a sudden, you blink as you see them marching the other way "Are they suddenly coming back?" you ask yourself, "or are there TWO parades marching on opposite courses?"

In the making of professional motion pictures the director is always careful to see that when a character enters a door in a long-shot and starts right toward a chair, in the closeup showing him taking the last step before sitting down he is still going right, and not left Go to see a picture directed by a man like Ernst Lubitsch at your first opportunity, and watch how a master craftsman really handles his people in action

Especially if you are shooting kodachrome, watch out for clouds that suddenly pass overhead, practically killing your light Recently I had to sacrifice one of the most interesting scenes of an amateur's travel picture because after the first five feet of the scene dark clouds had hidden the sun and the pictures were so dark you couldn't see them If that man had waited for the clouds to pass he would have saved his scene He won't make the same mistake again Neither should you

Another cute little trick so many amateurs do is to stop the camera in the middle of some excellent action Then suddenly start it going again That makes the editing job, either for the amateur or a professional, if he hires one, a real headache. I recall seeing a home movie of a baseball game. The amateur cameraman had set up his camera and shot several feet of a close up of a player at bat The player was holding his bat right-handed and was swinging the bat out waiting for the pitcher to throw the ball The cameraman stopped his camera to wait also, I presume In the meanwhile the batter decided to shift his position and bat left handed So what you saw on the screen was a right handed batter swinging, and then suddenly he was a left handed batter swatting the ball great guns. What you didn't see, and couldn't figure out, was how that switch came about, for the man with the camera didn't photograph the batter's switch-over.

Another very frequent mistake amateurs make is that of not shooting enough footage when they have a really important subject to shoot Frequently in editing films for amateurs I have been heart-broken to find they had hundreds of feet of tripe, but only a few three- to four-foot flashes of the shots that really would have made their films worthwhile

There is no reason whatever why any amateur who knows how to use his camera from the point of technicality cannot make just as pleasing, just as fine, travel-films as any professional Just last month, for example, I had the pleasure of editing a film of Guatemala and Costa Rica made by a Los Angeles man who had never shot such a film before in his life He shot it on kodachrome, and believe me when I say it is a better and more entertaining film than half the professional travel shorts you will ever see It is so because the man has an unusual sense of composition, and he decided that he would take plenty of footage of the most interesting subjects, feeling that it is easier to cut them down than to find insufficient footage after he had come home With all the skill of a professional this man made long-shots, then moved in and made the finest closeups you will ever find And he didn't photograph a lot of uninteresting stuff. When he didn't see anything worth photographing, he just didn't make pictures. Perhaps that is one of the greatest failings among all amateurs. They feel that they must shoot everything—but at long range

In closing, let me advise amateurs in making travel pictures to remember that the people who will be looking at their pictures on the screen in the living room will not be equipped with binoculars They will have just normal eyes with which to see your film So make it so they can see it Don't shoot just for the sake of shooting Wait for interesting subjects· then shoot them showing lots of interesting action Never photograph people just standing. Always have them doing something, and if they can't do something interesting, skip the shot. Just remember that ten minutes of really interesting scenes will make your friends want to come back and see more of your pictures, but two hours of boring long-shots will keep even your best friends away! **END**

Effect-Lightings

(Continued from Page 25)

tually exist when the camera was grinding For instance, suppose you want to make a scene in which two people are riding in a car. For a day-effect, you *can* mount your camera somewhere out around the radiator-cap and shoot it with the car actually driving along, though it's rather inconvenient. But for a night-effect, even with today's fastest films, you can't get enough exposure to do this

Instead, though, you can park the car somewhere that's convenient to an electric-light outlet, and let your lighting suggest that the car is moving!

Begin by composing your scene so that the camera sees *only* the inside of the car Then be sure and pull down the shade over the car's rear window, so your lens won't be looking out through that

Next, fix a clamp-on reflector unit either on the floor of the car, or perhaps clamped to the dashboard, so it throws a beam of light up into your actors' faces, giving an effect rather like the light from the instrument-board

Now, put a considerably stronger light —a spotlight, if you have one—outside the car, shining in onto your players' faces from the side It's got to be enough stronger than the illumination from the lamp inside the car so that it appears as a definite highlight.

By moving a large piece of cardboard with a vertical slot in it past this lamp, in a horizontal direction, you can, with a bit of practice, reproduce the effect you'd see in a real car as it approached, passed and then receded from real street lamps Remember, by the way, that if your camera-angle is straight into the car, and your "effect" light is on the left side of the car, the moving beam of light should move from left to right to give a natural effect Next time you go driving at night, just watch the way the beams of the street-lamps play across passengers' faces, and you'll see how easily you can simulate that effect for a home-movie effect-lighting.

The same general trick can often be used to suggest that the car is moving in the moonlight, along a tree-shadowed roadway. Only in this case, your "effect" light shouldn't be quite so strong, and the effect is produced by moving shadows instead of moving highlights To make these shadows, you can use real branches, or pieces of cardboard cut out in irregular shapes that will make shadows suggesting branches If you want to be downright professional about it, you can make a drum large enough to fit over

= = = and

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your lamp, with the edge of the drum cut out to give these shadows, and then revolve the drum slowly (and horizontally, of course) about the lamp to make the shadows move

Another useful trick of effect-lighting is used when we want to suggest that our actors are on a boat, or seated beside a romantic lake or stream. We put a shallow pan on the stage floor, with some pieces of broken mirror in it covered by about half an inch of water. Then we shine a strong spotlight downward into the pan, at such an angle that it reflects upward either onto the people, or into some part of the set. By gently shaking the pan, we produce a ripply beam of light which excellently suggests the reflected light from a lake or river's surface. You can work this trick just as well in your home films, too.

And finally, don't forget the most common "effect-lighting" of all—even though it's so common the professional never thinks of it as an effect. It is the trick of suggesting natural depth in a long-shot by using contrasted planes of highlight and shadow in lighting a set. If, for instance, you make a long-shot of your living-room, you might have the immediate foreground fairly well lit—say by a conveniently-placed stand-lamp—then a region of less illumination, then another highlight-region, and so on. This trick of semi-silhouetting the various planes of the picture will add depth to your shot, and make your scene seem much more real than if everything was fully illuminated. And—it's easier to light, and can be done with less equipment than a full lighting!

Once you've gotten the trick of effect-lighting from making a few experiments such as those outlined, you'll find the possibilities are almost unlimited, even in the simplest of home-movies. As we said at the start, equipment is by no means the most important element an observant eye is the real essential. If you're really interested in effect-lightings, keep your eyes always on the alert, study the effect-lighting by which all of us are surrounded in our every-day life. And you'll find that with only a little thought and effort, you can reproduce most of them in your own home films, so that on the screen your pictures will become more natural—more real—than ever could be if you contented yourself with conventional, run of the-mill "full" lightings. END

Laraine Day

(Continued from Page 24)

ative Pictures" held its own Gala premiere. For a theatre, they used the Culver City Women's Club. A couple of "Dinky Inkies" served the purpose of the huge arcs that sweep the sky to call attention to Hollywood's professional premieres. Even the rite of making hand and footprints in the cement of Grauman's Chinese Theatre's forecourt was reproduced—this time in the form of a box filled with sand!

Since then, the "regulars" of the group have been spending week ends making tests, and trying out short sequences to prove their technique and ideas. Cinematographer Day proudly admits one of the great moments of her career was the week-end when she first tried the wind-back on her 70-E Filmo for making lap-dissolves and double-exposures—and then, in her home projection-room, saw that they actually worked successfully!

"We're just about ready to start our next production," she says. "Our technique is still a long way from professional, but we feel we've learned enough so we can go ahead with another full-length production without blushing too badly. This one is going to be a serious drama, and it will be our first attempt at interior lighting. Every scene in our script is an interior—and we expect to learn a lot about lighting, technically and artistically, from this picture.

"There's one great advantage to being connected with a professional studio, as we are. There are so many helping hand volunteers as soon as the folks learn we're really serious about our movie-making. We chose our story, for instance, and then one of the studio's best writers showed us how to put it into script form. The cinematographers with whom I work gladly offer advice on how to use my camera and lamps, and so on.

"So we're learning doubly. Already, I've learned why the director and the cinematographer make me do so many apparently inconsistent things on the set—when you see things through the camera's viewpoint, instead of from the other side of the lens, they're perfectly logical—and necessary if you want the scenes to cut together into a satisfactory sequence.

"Yes, this picture, too, is going to be silent. But we're hoping we can later synchronize it with sound-on-disc with my home recorder. And of course eventually I'd like to have a sound-on-film recorder, too, so that we can make professionally-synchronized sound-films.

"But that's well in the future. Right now, we're just a group of amateurs trying to learn enough about silent movies so that some day we can perhaps work out a few new ideas in treatment, and the like, that may eventually prove helpful professionally. And maybe—if our picture is good enough—we might submit it for review in THE AMERICAN CINEMATOGRAPHER'S "Home Movie Previews Department'" If our amateur work can get a good review there, we'll feel we've really begun to progress as 'professional cinemateurs'." END

Lamps

(Continued from Page 23)

sockets from the dime store. Since the rim of the dishpan tapers, it's a good idea to grind the bottoms of the sockets so the lamps will stand fairly straight. That's why plastic sockets are better for this job than porcelain ones, by the way.

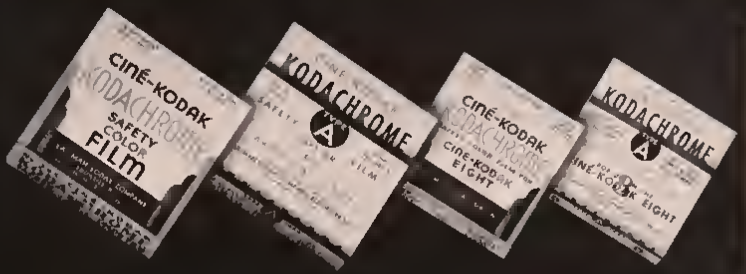
The sockets are mounted radially around the rim of the dishpan, so that the big ends of the Photofloods converge toward the center, and are well toward what was originally the bottom of the dishpan, to minimize "spilled light." I simply drilled holes in the rim of the pan, and attached the lamp-sockets to it with bolts.

The lamps are wired together—in parallel, of course—with fairly heavy, single-wire cable. At one end of the string of lamp-sockets, I drilled another hole in the pan this time at what was originally its bottom, but now its back, and passed the cable out through that to a dime-store switch, also bolted to the dishpan. From this I ran some 25 feet of two-wire insulated cable to the usual two prong plug which connects with the house current.

At the base of the lamp—any handy point along what was once the rim of the dishpan—I mounted a small brass block, properly tapered on one side to fit the taper of the dishpan's bowl, and fitted with a threaded, ¼-inch hole so the lamp can be used on a spare tripod. And a tripod is a particularly good mount for this kind of a lamp, for its size makes it a bit topheavy, so that the spread of the tripod-legs is useful in holding it steady.

I've found it to be a surprisingly flexible unit. It throws a wide flood of fairly strong illumination which is just the thing for providing a good, even foundation of general lighting. It's fine for Kodachrome, and doubly so for the new super-speed films, for it gives you a good, basic exposure-level from which you can build up your modelling and highlighting effects with your other lamps, and at the same time not have to worry about having your shadows, back-walls, etc., go absolutely black. And since the globes in the dishpan are wired in parallel, you can adjust the intensity of its light over a very considerable range by simply using more or fewer globes as may be required, using all No. 1's, all No. 2's, or mixing No. 1's and No. 2's as may be required—all without making much change on the spread of light the dishpan throws. You'll find that feature is especially useful when you're working with super fast films.

There's another variation of this same idea which ought to be useful with some of these fast films, for which you really need a soft, diffused general illumination if you want the most pleasing results. Take a good-sized pan like this, either of tin or white enamel ware, or even in a pinch the top of a galvanized garbage can. Use this as a reflector. Mount a photoflood facing it, in a smaller reflector, either home-made or commercial. The light from the Photoflood shines into your big pan, from whence it is reflected out at the subject, in the form of diffused, and therefore soft light. Mount the Photo-



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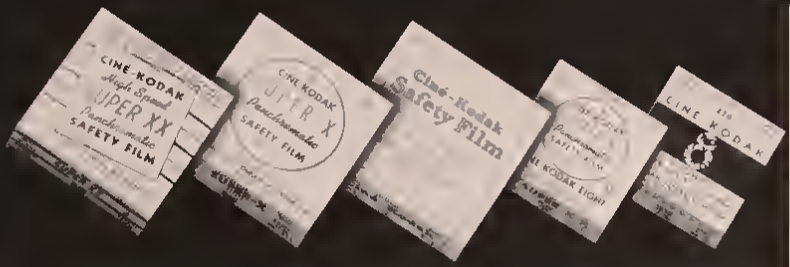

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need and the smaller reflector so they can be moved in and out with relation to the big reflector, and you'll have a very useful piece of diffused, indirect-equipment which will help you a lot in making pretty girls look pretty in shots made on fast film Try it' END

Jap Censorship

(Continued from Page 21)

every month, and not an inch of the film was censored Perhaps that was because Marquis Yamashina was the president, and hence the club was exempt' I never bothered to inquire, and probably wouldn't have found out if I had

After the China trouble started, it became necessary to have another special export censorship to take any films out of Japan That is, scenes that might pass for internal use might not pass for export. I had some thousands of feet of 16mm when I came to leave in May, 1940 Some of it was near the distress ban I couldn't see wading all through the official red tape, so my wife stuck the cans around in the dozen or so bags and trunks we carried, and fortunately no search was made before we left, so that my troubles with the authorities ended happily. But I'll admit I did breathe a little easier when the "President Coolidge" dropped the Japanese pilot outside Kobe harbor!

Most censorship is pretty dumb, but the Japanese weren't quite as thick-headed as you might think. I rather feel that a few recent shots of Japanese industries and power-plants might be rather welcome in certain quarters right now, and I have a further feeling that such information will be scarce and hard to locate Every Japanese tourist in this country wore a camera It was as much a part of his costume as his trousers And not a Brownie, either They had the best Germany could produce, and they used their Leicas and Contaxes ad lib There will be, I suspect, no shortage of pictures of U. S plants in the Tokyo War Office. Whether they will be of any assistance, of course, is another question They might be END

Focal Depth

(Continued from Page 14)

put over with sledge-hammer blows, or it would be lost It often was, anyway, because some inadvertent motion, or even tonal contrast elsewhere in the field of view attracted audience-attention at the wrong moment

But as screen technique developed, it was found that by bringing the camera closer to the person or object which was for the moment the center of dramatic interest, the audience's attention could be focused sharply on that one detail, excluding all others Director and cinematographer could compel the audience to concentrate on the desired detail, even if it were only the flicker of an eyelid

A very important factor in making this possible is what some people have called a basic weakness of photography the fact that lenses normally do not have perfect depth of field In the long-shots, for instance, a star may have a whole room full of people behind her In this angle, the normal lens' natural depth of field would show them quite properly behind her, well defined But in the closer angles, as the lens was brought to closer focus, and probably a longer-focus objective utilized, the depth of field would not normally be sufficient to show this background in equally perfect focus with the star

Far from being a dramatic liability, this is a dramatic asset In the close shot, the interest is on the star; the background is dramatically subordinate, for the moment, at least Normal photographic technique makes it visually subordinate, as well It should be, I think, our aim to keep it so, in the interest of effective story-telling

This is fully in keeping with the realistic effect, also When you are standing close to a person with whom you are talking—close enough so that you see him in close up angle—if your attention is really centered on that person, you cannot be aware of the details of the background Your eye perceives the general pattern, of course but it is a soft, rather out-of-focus pattern You cannot consciously perceive its details unless you definitely take your eyes—and your attention—from your companion

Undoubtedly there are occasions when, for dramatic effect, it may be necessary to show a player in a close shot, and at the same time show a well-defined image of some significant background-action in relation to him But with the exception of a comparatively rare story like "Citizen Kane," which was planned for filming with just this treatment in mind, I think we can conclude that such occasions are well in the minority.

From all of this, I think we can very well conclude that we cannot lay down any all-embracing laws as to what does or does not constitute good cinematography. Not only the immediate visual effect of any scene, but its dramatic relation to story and action must enter into determining this What is good camerawork under some circumstances, may be bad under others

To me, the really significant aspect of the modern increased-depth technique is not the rather obvious fact that by making use of modern objectives, lighting and emulsions we can obtain a depth of field impossible by the conventional method of using today's fast lenses at full aperture It is, instead, that it has given us something which rounds out our assortment of artistic tools, so that we have a better way of meeting the dramatic requirements of any story-situation Let us hope that if the pendulum of cinematographic style swings back again toward increased softness, we will not forget this technique For when we begin to believe there is only one way to photograph a scene, regardless of its mood and action, we're in danger of losing the varied approach to varied conditions which makes cinematography an art, rather than a process of mere mechanical reproduction END

Gregg Toland

(Continued from Page 15)

part in things not ordinarily connected with cinematography, why can't I help my pictures the same way by letting my cinematographer do the same thing?"

A few weeks ago, he signed what is reputed to be the biggest contract—in money and in professional stature, as well—ever signed by a cinematographer. And his reaction, as he expressed it to me, was not so much satisfaction on his own account, but the hope that once the word got around, some of the other members of his profession might have at least an entering wedge for making similar agreements, to the end that the camera profession as a whole might move up to a professional standing more commensurate with what it deserves.

He felt, too, that cinematographers, as a whole, are inclined to stay too close to their own work and problems "Of course," he remarked, "we have a chance to get together at A.S.C meetings, to talk over what we're doing. But I don't think that's enough I'd like to get together an informal little group of cinematographers who are thoughtfully interested in their work, and plan things so that when any one of us was between pictures, we would make it a point to visit the others' sets—not just to come in and say hello, but to spend half a day or a day at a time, just watching how the other fellow works, reviving your own viewpoint by absorbing a bit of your friends' I know I'd benefit by occasionally getting away from Gregg Toland's viewpoint and ideas, and seeing how, say, Arthur Miller, or Jimmie Howe, or Charlie Lang or Bill Daniels handled things And I'm sure they'd benefit in the same way by visiting each other, and exchanging practical ideas that way"

But for the present, that idea of Toland's is distinctly in the future This last year, with his close friend, director John Ford, he was one of the prime movers in organizing "Hollywood's Own" Naval reserve photographic unit And with America's entry into the war, he changed quickly into uniform, gathered his crew about him, and reported for active service As Lieutenant Toland, U.S.N., he is, with several of Hollywood's other outstanding photographic aces, "on location" with Uncle Sam—"for duration'" END

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Sun's Angle

(Continued from Page 13)

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The Heliocator was conceived and designed by A J Kooken, of the Warner Brothers Studio Art Department, and was constructed in the Studio's Camera Machine Shop under the supervision of Al Tondreau, in February of 1938 It has been successfully and continuously used since that date by this and other motion picture studios on sets and locations too numerous to be listed. END

Gun-Camera

(Continued from Page 11)

the lens electrically against the cold of the high altitudes at which modern planes fight.

Oddly enough, if the picture shows the sight directly on the target, the shot is usually a clean miss It is clear indication to the instructor that the student has not taken sufficient "lead" in aiming his gun ahead of the swift-moving adversary plane Only when the attacker is directly on the tail of the target, or when the two planes are flying directly toward each other, is such an aim good for a hit In any other flight maneuver it is necessary for the gunner to "lead" his target, making allowances for the distance between the two planes, the speed at which his ship is traveling and the speed of the adversary plane And it is in the measurement of the "lead" which the gunner takes, which gives the new equipment an important advantage

Each frame of film has four indice (indication) marks midway on the sides, the top and the bottom of the frame The camera is adjusted before takeoff so that the sight, an electrically lighted two-barred cross, coincides with these indice marks on the first frame of film By this arrangement, if the sight shows the aim to be a certain distance ahead of the nose of the target, actually the guns of the attacking plane would be pouring a deadly stream of lead into the opponent

The developed film is projected on a small viewer-screen, equipped with a mil scale of fine shadow lines around the edges, so that the instructor can view the frame critically, measuring the amount of "lead" taken by the gunner, and with the known facts of the speed of both planes can determine whether the frame should be scored as a "hit"

After the instructor scores each strip of film, he can call in the pilot who made it, and point out his errors Frequently the film is shown to a group of pilots in the classroom on a larger screen also equipped with the mil scale, so that the whole group can benefit from the discussion of "hits" and "misses."

As a simple means of identifying each film with the pilot who shot it the Wright Field armament branch technicians have suggested that each magazine be placed in an ordinary magazine-type home movie camera by the instructor, who takes a few frames of pictures of the pilot who is to use the film in his plane. The daylight-loading magazine is then taken out of the hand-camera and loaded into the GSAP camera for use.

Early in the use of gun-cameras it was learned that a principal advantage to the trainee was to see the results of his training flight as quickly as possible after it was made So Wright Field technicians and the camera manufacturers have developed a very nearly automatic processing technique, which the armament mechanics without expert photographic knowledge can use Without divulging the details of the processing it may be said that it is of the reversal type, so that the film can be used in a projector immediately, and that it comes out of the process spooled on a reel ready to go into the projector in a very short space of time Thus the student is enabled to see his pictures the same day he makes them

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vidual pilots, the gun-camera is valuable for other purposes. "Blind spots" on planes to determine how large a group of fighters is necessary to attack a single large enemy bomber can be discovered, and the proper angles of approach for keeping as much as possible out of his line of fire.

First prepared for fixed mounting, the GSAP camera is being adapted for flexible gunnery practice also. Here the air corps engineers are confronted with a new problem, since today's flexible gunnery consists in the manipulation of power turrets, bristling with two to four heavy-caliber machine-guns, instead of the single, manually operated gun of the past. END

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Coordinating Meters

(Continued from Page 10)

I get a reading on it only slightly *above* 1.6—how much above depending, of course, on the amount of tonal separation I desire, and the shade of gray I want in the rendering of the wall.

In taking these readings, I make it a standard practice to hold the meter as close to the object upon which I am reading as possible without reading in my own or the meter's shadow. This is important, as when the cover-plate of a Weston "Master" is swung back for low-intensity readings, the meter's angle of acceptance is broadened to about 60°, or rather more than double its high-range angle. Speaking generally, it appears, too, that since the meter's color-sensitivity is quite reasonably close to that of the average panchromatic negative, the meter's eye automatically makes compensation for differing colors and reflective values in the subject.

If, as sometimes happens, one may want to go up or down the printing scale from the light normally favored, to obtain some special effect, it can be managed very easily and accurately employing this same system. We know that a difference of four printer-lights is equivalent to one stop difference in exposure. In the same way, on the Weston scale, one stop difference in exposure is equivalent to three segments or blocks on the meter's primary brightness-scale. If, for example, we wanted a scene to print on light 16 instead of light 12, we would mentally revise our meter-scale and know that an object we wanted black on the screen should be lit to a brightness of 3.2 instead of 1.6, and an object we wanted white, to 50, instead of 25, and so on.

In the same way, we sometimes find it desirable to stop the lens down for increased depth of field, rather than using it at full aperture. Knowing that each stop-value of exposure is indicated by three sections on the meter's scale, we can again modify our technique accordingly. If, for instance, we want to photograph a scene at *f* 3.2 instead of the usual, wide-open *f* 2.3, we know that our previously determined bottom- and top-scale meter brightness readings will be moved upward from 1.6 and 25 respectively to 3.2 and 50, and the indication for a normal, middle-tone gray would be moved up from the first block over 6.5 to the first one above 13.

This same system of reflected-light measurement could probably be used quite as well for making key-light readings on the players. However, for normal effects the more conventional incident-light measurement is probably more convenient, as it is not always advisable to take a reflected-light reading with the meter so close to the player's face as is necessary for accurate measurement.

However, for accurate measuring of effect-lightings on sets or players, I have found this system highly accurate and convenient, with the added advantage that it enables one to coordinate his meter and its use to the processing of his negative so that the meter can be used with extreme precision. END

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I-R System

(Continued from Page 9)

so that the picture of the entire set is in focus on the film.

Inasmuch as the focusing of the images of objects lying within any region in the set is dependent on the identifiable illumination of that region, it is clear that the image of each region can be controllably focused or softened to any desired extent regardless of the sharpness of focus of other regions. Thus individual objects can be changed in sharpness by altering or destroying the identifiable characteristic of the light falling on such objects. Accordingly, it is possible to produce what would otherwise seem to be an optical anomaly, namely,

and as an example, pictures in which the foreground and background are sharply focused but in which the middleground is softened to any desired extent. The imaginative director and cameraman will readily see numerous dramatic and comic possibilities in so versatile a type of photography

Multi-regional photography by the IR System is so novel a method of optical imagery that it naturally leads to some new optical concepts which, for convenience, should be given appropriate names and defined. This has been attempted in the following set of definitions of terms which have been found conveniently usable by the workers in that field. The list is incomplete since a considerable number of the concepts and methods involved in the IR System are beyond the scope of this paper, and accordingly the terms involved in those relations are not here included

Region.—A portion of space symmetrical about the optical axis of an objective lens, based upon a central plane of sharp focus, and bounded externally front and rear by surfaces corresponding to a predetermined and maximum tolerable value of the diameter of the circle of confusion of the image of a point source placed upon such surfaces

Division.—A portion of space symmetrical about the optical axis of an objective lens, based upon a central plane of sharp focus, and bounded externally front and rear by surfaces corresponding to a predetermined value of the diameter of the circle of confusion of the image of a point source on such surfaces, such value being less than the tolerable maximum. A division thus resembles a region but corresponds to less than the full depth of focus of the lens. Thus, there will be more divisions in a given object space than there are regions

Differential Focuser (briefly, Diffo).—An optical element placed suitably in relation to an objective lens and capable of rapidly shifting the back of focal plane thereof according to a predetermined time schedule during a picture-making period, but without the introduction of perceptible aberrational errors in the conjoint optical system.

Space Spillover.—The amount of light intended for illumination of one region (see above) which actually reaches another region (expressed in percentage of the light normally sent into the second region). The definition can also be applied to divisional space spillover

Time Spillover.—The amount of light intended for illumination of a given region within a given period which begins before or lasts beyond such period of illumination (expressed in percentage of the normal illumination of that region during that period). This definition may also be applied to divisional time spillover

Space Registration.—The deviation from exact registration during a complete exposure between the outer edges of opaque objects in a frontal region and the inner edges of the thereby-occulted or masked outlines in a region further removed from the lens.

Motional Registration.—The deviation from exact registration during a complete exposure between the positions of outer edges of moving objects in a frontal region and the inner edges of the thereby-occulted outlines in a region further removed from the lens

For convenience of reference it may be here added that space registration effects result from the relatively unfocused edges of frontal-region objects, acting as masks during the photography of further removed regions. Motional registration effects, on the other hand, result from the shifted edges of frontal-region objects in motion at the time of photographing further removed regions.

In order to make the method of operation of the timed-illumination form of the IR System clear, a schematic arrangement is shown in Fig. 1 illustrating the illumination of the set. The central planes of the regions are indicated, but it should be remembered that these planes are somewhat forward of the geometrical center of the region since the back depth of field always exceeds the front depth of field. The front and back boundaries of the regions are also shown. The regional illumination in each case is seen to be directed into that region only, and with minimum space and time spillover. The camera shutter is replaced by a differential

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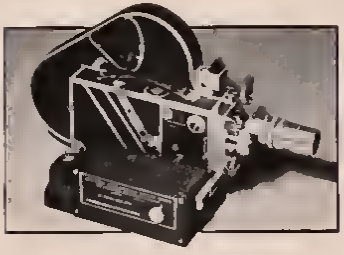

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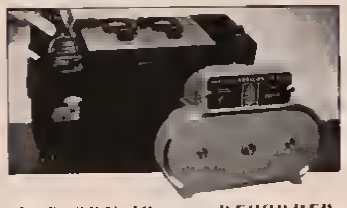

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housed in diffo, which operates synchronously with the flashing of the lights in each region. This changes the position of the focal plane systematically so that each region is imaged in the same plane, namely, that of the film.

Considering Region 1, *FP 1* is the central or focal plane. Top lighting into the region is indicated by *TL 1*, side lighting by the oblique lamp *SL 1*, bottom lighting is indicated by the lamp *BL 1*, and back lighting for Region 1 by the lamp *BAL 1*. Similarly top lighting for Region 2 is indicated by *TL 2*, and for Region 3, by *TL 3*. The coordination or synchronizing of the illumination from these various lamps with the angular position of the diffo in the camera is schematically indicated by the dashed lines in Fig. 2.

It is obvious that there are many ways of focusing differentially and of timing the regional illuminations in synchronism with the phase or position of the diffo. Typical examples of these will be described further below.

The system shown in Fig. 1 leads to an interesting form of the curve connecting distance from the lens and diameter of the circle of confusion in the image of a point source at the corresponding distance. This multi-cusped curve is shown in Fig. 2. The positions of the central planes of the regions, the regional boundaries, and the maximum permissible circle of confusion diameter (taken as 0.002 inch for 35-mm film) are all indicated on the drawing. The left-hand loop corresponds to ordinary photography, while the complete curve corresponds to the increased depth of IR System photography.

By way of comparison, there is also shown on Fig. 2, as a dot-dashed curve, the depth of field of a lens of the same focal length stopped down to the point where it covers the same total or overall depth of field as three-regional IR System photography. It will be seen that the results of the two methods are even then by no means identical, or indeed equivalent in photographic effect, that is, even when the stopped-down lens is used to obtain equal overall depth. The IR System curve shows clearly three minima, corresponding to planes of sharpest or "absolute" focus. Thus, it is quite possible to place the central or most sharply focused plane of the rearmost Region 3 in the IR System at the back wall of the set or, alternatively, on the screen forming the back drop for rear projection composite shots (as described more fully below). In this way, the important background is shown in completely sharp focus, as are also objects at several other distances from the lens—and, of course, all other objects in the field are depicted "in focus"—that is, within the acceptable limits of sharpness. In the case of the stopped-down lens, on the other hand, only objects at a *single* distance from the lens can be in absolute focus; and the important background, for example, is less sharp than this, although perhaps acceptable.

Using IR System photography, it is also feasible to divide the object space into more divisions than the number of optical regions it comprises. In that case, the curve corresponding to Fig. 2 will have as many minima corresponding to absolute focus as there are divisions, and thus there will be more minima than there are regions. Furthermore, in this arrangement, the maximum value of the diameter of the point-source image will always be less than the permissible maximum of 0.002 inch for 35-mm film, and this diameter and the corresponding sharpness are in fact under control with the arrangement in question.

Up to this point it has been tacitly inferred that the boundary surfaces of the various regions in IR System photography are plane surfaces perpendicular to the optical axis of the lens, as schematically indicated in Fig. 1. Such, however, is not the case. It is well known that the speed of a lens is always less for the edge of the field than for the center because, in the main, of the occulting effect of the lens tube and the interior stops for oblique passage of image-forming rays through the system. Thus the depth of field at the edges is greater than at the center. In consequence, the boundary surfaces of the regions are as indicated in Fig. 3. The central or focal plane of Region 1 is indicated by *FP. 1*, and the dotted lines *F1* and *B1* are sections of the surfaces of revolution comprising, respectively, the front and rear boundaries of Region 1. Similarly *FP. 2* is the central plane or Region 2, and the dot-dashed lines *F2* and *B2* represent the front and rear boundaries of Region 2, while *F3* is the front boundary of Region 3, of which *FP 3* is the central or focal plane.

It is characteristic of the IR System that the illumination of any one region shall be restricted with minimum spillover to that region. From Fig. 3, it is obvious that oblique regional lighting in Region 1 can enter the region at considerable angles with the optic axis of

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the camera lens without violating the condition of optimum. Increasing obliquities are available for the illumination in the successively further removed regions, as indicated by *ORL 2* and *ORL 3*, respectively. A similar comment as to permissible obliquity of back lighting applies, as indicated by the back oblique regional light *BORL 1* for Region 1 and by *BORL 2* for Region 2, respectively. As a result of these flexible conditions, it proves to be conveniently possible to duplicate effectively any desirable light vector (that is, magnitude and direction of luminous flux) in each region. It is also interesting to note that the cross-hatched volumes of which the cross section are indicated as *1,2* and *2,3*, respectively, in Fig. 3 can be appropriately illuminated according to the IR System requirements by light from either Region 1 or Region 2 for the volume *1,2* and by light from either Region 2 or Region 3 for volume *2,3*. This adds to the convenience of regional lighting.

During the development of the IR System, comprehensive tables were prepared giving the regional central distances and forward and back limiting distances for an adequate variety of focal lengths of lenses used in motion picture work and also in television, for a considerable number of lens speeds, and for numerous working conditions covering an extremely wide variety of requisite depths of field. In their totality, these tables substantially eliminate any need for computation, reference to other depth-of-field tables, or delay in the application of the IR System to any desired circumstances and needs.

It may be added that under conditions where a one shot in a close-up can be made only with some difficulty by ordinary photography, the IR System will permit making two shots or even three-shots with the several actors back of each other at acceptable and convenient separations.

As was mentioned above, there are a number of available methods for the differential focusing of the lens in synchronism with the sequential lighting of the corresponding regions in the object space. The basis of one form of differential (diffo) is shown schematically in Fig. 4. The lens is indicated in each case by the vertical line through its center. Assume that O_1 is an object in Region 1 and that the corresponding image is located at I_1. An object O_2 in Region 2 produces an image at I_2 closer to the lens. A diffo plate may be interposed in the path of the image-forming rays on their way to I_2. It is well known that the emergent rays in this case will be parallel to the incident rays but that the new image location I_1 will be displaced away from the lens by an amount depending upon the thickness of the plane-parallel diffo plate and its refractive index. By an appropriate selection of these constants, the image of O_2 can be brought to the same location I_1 as was the case for the object O_1. If the thickness of the diffo plate is less than a certain fraction of the focal length of the lens, no discernible optical errors will be introduced into the thereby displaced image as a result of the interposition of the diffo plate in the path of the image-forming rays.

A diffo is shown in Fig. 5 together with a corresponding aperture plate, both intended to replace the shutter in a certain standard form of studio camera, and without any modification of the camera mechanism or construction. The five diffo plates are visible in the right-hand portion of the figure, the thickest of these corresponding to the farthest region or background.

The procedure in using the IR System under studio conditions may be briefly summarized in the following. This procedure markedly resembles that for ordinary photography. It is first determined what depth of field is desired, and also the distance of the foreground plane (that is, the nearest distance to the camera at which a person in absolute focus is to be located). The pre-computed tables of the IR System will then indicate for each focal length of lens and for each desired stop, the number of regions that will be required to cover the desired depth of field. Further, these tables will give the axial distance from the lens of the front and rear boundaries of the regions in question. The edge

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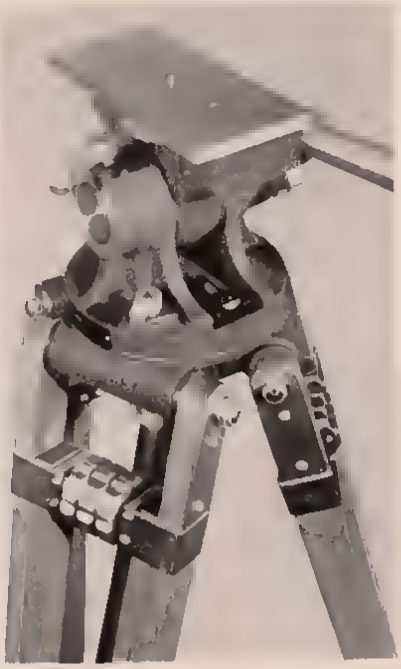

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boundaries can generally be approximately determined from these tables by a simple procedure which need not be here described. As an alternative method, of a more conservative sort, it is merely necessary to determine the depth of field of a lens of the focal length which is desired when stopped down to an extent equal to the normal lens aperture multiplied by the number of regions. Thus, if a 50-mm lens operating at *f* 2.8 is used for four-regional IR System photography, as a first and conservative approximation the working depth will correspond to that of a 50-mm lens operating at *f* 11-2 (and thus requiring sixteen times the previous amount of light on the set').

Having thus determined the regional boundaries the lamps are set up to produce the desired key and modelling lighting for each region with minimum spillover into adjacent regions and reasonably good blending of lighting between regions. As a general rule this will merely require inserting the plug at the end of each lamp cable into a spider corresponding to the region which that lamp will illuminate. The power supply and adjunct wiring to the spider are of course properly associated with the power supply to the camera motor, both as to frequency and phase.

The camera is set up at its appropriate location and checked, by means of the finder, for focus and depth of field. It may be added that the finder should preferably also be adapted to IR System viewing so that the cameraman has a correct idea of the depth of field in the corresponding picture.

In the event that background projection is used, it becomes necessary to time the projection of the background so that it corresponds with the regional location of the projection screen. Otherwise stated the light-source in the projection lamp house has a phase and duration appropriate to the region in which the screen is located. Thus the background image is in complete focus thereby avoiding one of the most serious limitations in such composite pictures, namely, the conflict in focusing, so to speak, between the actors in the foreground and the screen in the background.

Experiments have been carried out to judge the amount of spillover light which is permissible. Experience has shown that the sharpness of photographic focus is not appreciably affected on important parts of each regional picture if the spillover does not exceed 3 per cent. On the most important planes it is usually preferred to keep the total spillover at 2 per cent or less.

Extensive work with the IR System has made clear that the method is not a mathematical abstraction or a precision geometrical system under normal working conditions. It turns out to be a convenient method of operation with which liberties can be taken in practice and which can be used with the same latitude and discretion as any other photographic system. When first utilized, it is found strange to accept the IR System convention that light can not be poured through the set passing through one region after another but that the illumination must rather be handled sequentially and region-wise, so to speak. The duplication of the existing lighting effects by modifying lamp locations and directions seems at first unfamiliar. However, after a little experience with the system all strangeness disappears and the simplicity of operation of the system becomes evident.

Fig. 6 illustrates a small set illuminated according to the IR System by means of shuttered incandescent lamps. As a matter of convenience, these lamps were mounted on pipe racks. The shutter of each lamp was regionally synchronized and operated in synchronism and suitable phase relation to the camera and diffo drive. It was also possible to take pictures according to standard photography on this set-up either by removing the diffo from the camera or by bringing all regional illuminations into the same timing (for example, that of Region 1).

Using a lens of 2-inch focal length operated at *f* 2, pictures were taken by standard photographic methods with four men between approximately 7 feet and 25 feet from the camera. The result is shown in Fig. 7. Only the foreground individual is in focus. The calendars in the middle ground should be noted, and are obviously badly out of focus. The poster behind the man in the background is indistinguishable.

Fig. 8 shows the corresponding result when IR System operation was utilized. The same lamps, lens, aperture, film, development, enlargement, and all other pertinent circumstances apply to both Figs. 7 and 8. The appearance of the calendars and poster should again be noted.

Using systems wherein relatively brief flashes of timed illumination are employed in each part of the set, it is possible to photograph the same subject matter "simultaneously" from different angles. It is true that different portions of each frame period of 1/24th of a second are used for the photography of each angle shot but the final films give no indication of this slight time staggering between the various angle shots. The method can be illustrated by consideration of Figs. 9 and 10.

In the upper portion of Fig. 9 is shown one method of time division between two cameras. The periods during which the shutter of each camera is open, and the periods during which it is closed are indicated. Consider the period shown to the left during which the shutters are open. The length of this period may be taken as 1/48th of a second on the arbitrary assumption that a 180-degree shutter is used. This period of 1/48th of a second is equally divided by the vertical dot-dash line. The period of 1/96th of a second to the left of the dividing line is assigned to Camera 1. Assuming 5-divisional operation, the flashes in the respective divisions occur as indicated by the vertical lines which are designated, respectively, *F11–F15*. The period of 1/96th of a second to the right of the dividing line is assigned to Camera 2. Assuming this also to be a 5-divisional take, the divisional light

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flashes will occur as indicated by the vertical lines *F21–F25*. So far as photography is concerned the arrangement thus far described is adequate and enables the simultaneous photography by

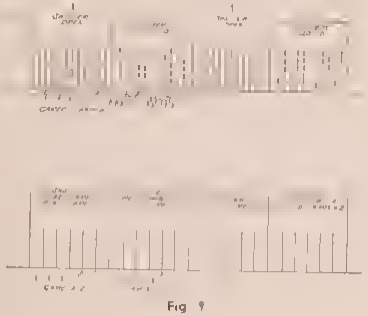

Fig 9

the IR System of two different angle shots photographed, respectively, by Cameras 1 and 2. However, there would be only 24 flashes per second on each portion of the set using this arrangement, and this would give rise to noticeable flicker. To minimize or eliminate this flicker, additional flashes *AF11–AF15* and *AF21–AF25* are introduced as shown during the period when the shutters of the two cameras are closed. While these additional flashes do not produce any photographic effect they do minimize flicker since there are now 48 flashes per second illuminating each portion of the set.

An alternative arrangement of somewhat different type is shown in the lower portion of Fig. 9. In this case the two cameras are so operated that when the shutter of one is open and the set is illuminated, the shutter of the other is closed and the set is not illuminated by its associated lights. The divisional illuminations for Camera 2 are here indicated by *F11–F15*, while those for Camera 1 are shown as *F21–F25*. The avoidance of flicker in this arrangement requires some planning in the placement and use of light, and for this reason the arrangement shown in the upper portion of Fig. 9 will sometimes be preferred. Experiments showed the feasibility of operation according to the methods of Fig. 9 whereby several cameras are each associated with their timed illumination of the set, and with the divisional light distribution utilized in the IR System.

A schematic layout for the lights corresponding to the arrangements of Fig. 9 is shown in Fig. 10. The three-walled set is indicated. Camera 1 takes a comparatively wide-angle shot wherein the person *C*, who is the center of interest, is photographed in a semi-close-up. The illumination is produced by the divisional lamps *L11–L14*. Since this is to

Fig 10

be a semi-close-up, the illumination may be kept comparatively soft. The lamps are coordinated with the camera and diffo as indicated by the dashed lines marked *Co-ordination 1*. Camera 2 takes a longer shot but with a narrower angle of a different section of the set as well as a partial side view of the individual *C*. Since this is a more distant view, the lighting may be made harder to emphasize detail and modelling. The corresponding lamps are *L21–L24*. In this case also, the lamps are timed in association with the camera and diffo as indicated by the dashed lines marked *Co-ordination 2*. It should be particularly noted that entirely different lighting effects can be produced in the pictures taken simultaneously by the two cameras — a markedly novel and obviously useful feature.

In essence, conventional studio lighting may be arbitrarily divided into key lighting and modelling lighting. The former is a more or less general illumination, intended to set a minimal lighting level through all or most of the set. The latter is lighting which is intended to produce shading, thus giving roundness, form, or solidity to persons or objects. It is generally carefully directed and of the spot variety.

In the IR System, modelling lighting requires relatively little change from the previously used conventional methods. Some care is taken to use a sufficient number of aimed spots to avoid undue space spillover while yet retaining the

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desired modelling for rather wide axial excursions of the actors. In the frontal regions this requires reasonable care. In the rear regions the latitude in light placement is so wide as to eliminate any necessity for special treatment.

Key lighting by the IR System requires suitable methods for duplicating the lighting vector in any important portion of the set. That is, the intensity and direction of the incident light must be duplicated in each region, and without undue space spillover of light from that region. It has been found in practice that any desired light vector normally encountered in motion picture photography can be duplicated by IR System lighting after a brief analysis of what is required. As experience in the use of the IR System is acquired, this duplication becomes increasingly simple. The details of light placement and the securing of specific effects using IR System lighting can not be here included. To some extent, as with all other lighting, it involves solving minor lighting problems as one goes along.

The following comments list certain minor limitations in the IR System which, in the main, are only apparent. Methods of overcoming these seeming restrictions are known, except where otherwise stated.

(*a*) *Need for Controllable Lighting.*—Since the regional or divisional control of lighting is an essential feature of the IR System it is obvious that the system can be best used under studio conditions. The evolution of modern light-sources makes their control practicable.

(*b*) *Registration Effects.*—The magnitude of the registration effects is controllable, and all indications are that such effects can be made pictorially imperceptible or negligible. A number of comparatively simple equipment designs and operational methods have been devised for this purpose.

(*c*) *Lighting Efficiency.*—The lighting efficiency of the IR System depends upon the type of lamp which is used. Flashing lamps, wherein all radiated light is emitted during an extremely brief period, enable efficient operation. If arcs or incandescent lamps are used, with suitable shutter arrangements, the total amount of light produced by each lamp must be correspondingly greater than that which passes through the shutter opening to the related region or division of the set. The shutter naturally prevents the utilization of the light not passing through its opening. Thus, for shuttered lamps, while the amount of light on the actors does not exceed that used in ordinary photography, the total amount of light flux produced by the lamp (and consequently the power load and the studio air-conditioning load) must be increased. On the other hand, when flashing lamps (*e.g.*, gas lamps) are used, and provided these have the high efficiency of the better designs of this type of lamp, the light on the actors and also the total light flux produced by the lamps are each no greater than for usual photography. Thus the flashing lamp, although the more unusual, is in some respects more convenient and efficient.

(*d*) *Flicker.*—Inasmuch as the illumination is intermittent, precautions are taken to prevent visible or objectionable flicker. In Fig. 16, a 48-flash-per-second regime was illustrated. However, the lighting frequency on each portion of the set can be increased as desired. Experience has shown that 48-cycle illumination, while not absolutely smooth, does not seem to create sufficient flicker to be annoying to most people.

(*e*) *Acoustic Interference.*—Shutters, driving motors, or any other equipment for intermittent illumination timing must be silenced to an extent such that no sound from them is recorded. The expedients adopted for this purpose are in considerable measure conventional.

(*f*) *Inductive Interference.*—Flashing lamps, and their associated timing circuits, require suitable electrical design and shielding to avoid any undesired induction, for example, into the recording circuits.

(*g*) *Approach Shots.*—The maintenance of sharp focus in all parts of the set throughout approach shots is readily possible in the IR System. It requires the use of one of a number of expedients, mainly based on a consideration of appropriate regional and divisional arrangement of the lighting. The detailed methods can not be included within the space of this paper.

(*h*) *Panoramic Shots.*—It is also possible readily to make panoramic shots using the IR System, the lighting arrangements suitable for the purpose being known and practicable. Experience and analysis have shown that the a wide variety of photographic proce- adaptation of regional illumination to duties is simpler than might be anticipated. END.

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Technical Progress

(Continued from Page 7)

field current of the generator powering them.

The first commercially-available tripod designed and built specifically for use with the various 35mm hand-cameras and 16mm. professional-type cameras was introduced by the Camera Equipment Co., of New York, under the trade name "Pro-Junior" tripod.

Accessories—Amateur

One of the outstanding developments in this field was the Craig "Enlargo-Editor," a refinement of the familiar Craig 8mm motion-viewer, incorporating a means of projecting an enlarged image of the frame being viewed onto a length of rollfilm in a camera-like housing, to permit the making of single-frame enlargements from 8mm film.

Bell & Howell introduced a plunger-operated quick-action shift for their turret-equipped 8mm. camera, and a mechanically-operated fading and wipe device for both 16mm. and 8mm. cameras.

Harrison & Harrison introduced the "Rotofade," a compact, manually-operated fading device utilizing a disc-shaped graduated filter or fading-glass.

The American Bolex Company introduced an iris vignetter and a frame-counter for their cameras, and also the "Gearmaster" tripod-head, the first commercially available substandard tripod-head incorporating gear-actuated pan-and-tilt movements.

The introduction of a new line of 8mm and 16mm projection reels made of transparent plastic followed the curtailment of the steel and aluminum usually used for such reels.

Meters

As already mentioned, there was an increased trend among professional cinematographers to the use of photo electric meters.

Karl Freund, A.S.C., devised an interesting method of adapting a standard Weston meter for making incident-light readings. This was done by fitting an objective lens over the meter's cell, and a suitably-supported white target card upon which the incident-light reading was made.

Capt. Donald Norwood, U.S.A.C. (Ret.) introduced a refinement of his "prevailing illumination" meter, marketed under the name Norwood "Director" meter by the Photo Research Corp., of Los Angeles. This meter utilizes Norwood's hemispherical incident-light collector and is individually calibrated to the laboratory handling the individual user's film. It is made solely for professional use, and has met with an unusually favorable reception, one studio, at least, having standardized on this meter to be supplied by the studio to all the staff cinematographers.

Set Design

The release of "Citizen Kane" brought in its wake a marked trend toward the use of sets with practical ceilings. Properly used, such roofed-in sets can add considerably to the atmospheric value of many types of scenes. It also compels the cinematographer to revise his system of lighting to a more realistic vein, lighting largely, if not exclusively, from the floor rather than from overhead.

The year brought several definite trends in the matter of designing for color films into sharp focus. On the one hand is the use of dramatically-distorted color, as exemplified by "Blood and Sand," for dramatic effect, on the other is the opposite practice of underplaying color in settings, allowing actors and costumes to be the chief notes of color, as exemplified in "Blossoms in the Dust."

Art Director F. Paul Sylos did some unusually effective work in designing sets for the Pine-Thomas productions which permitted the Director of Photography to suggest expansive scenes with a minimum of actual set-construction. Art Director Vincent Korda also did considerable excellent work with set-miniatures in such films as "Lydia" and "Jungle Book."

The use of extremely large, stage-built exterior sets increased considerably in virtually all studios. The development of the "Ripple and Wave machine" by Warner art-directors Anton Grot and Leo Kuter aided this. The machine, remarkably compact, permits projecting on a cyclorama-backing the images of suitable sets of transparencies in a manner which give a remarkable illusion of moving waves extending to a considerable distance.

Laboratories

As already mentioned, several studios and laboratories changed over to the use of fine-grain positive emulsions for all daily and release-printing of both sound and picture, as well as for original recording and re-recording prints. In making this change, several methods were used to obtain the necessarily greater light output required by these emulsions. In some instances, mercury-arc lamps were used, in others, standard incandescent types, over-volted and air-cooled were found satisfactory. The results on the screen have revealed

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Several laboratories, under license from the Eastman Kodak Company, made commercially available a system of lacquering film as a means of protection from abrasions, oil-mottle, etc. The lacquer may be applied to one or both sides of the film, and when worn, removed and a new coat applied, giving what is in effect virtually a fresh print, since few abrasions penetrate beneath the tough lacquer coating. The treatment may be applied to both color and monochrome prints, and to negatives as well as positive film.

A new method of drying film was introduced during the year. Primarily for still photography, it should be adaptable to use in cine-film developing-machines as well, and should prove highly advantageous. This is the use of Infra-Red heat lamps, which, it is stated by the makers, dries film with unusual rapidity despite climatic conditions, and has the further advantage of drying the film from the inside outward, rather than from the surface inward.

35mm. Sound

Chief development in the 35mm sound field was the use, in key-city roadshow installations, of Disney's "Fantasound" system. This involves the use of separate films for picture and sound prints, the latter carrying four tracks, comprising three signal tracks and a control-track. The three signal tracks are reproduced through three separate amplification systems, and released by a multiplicity of loudspeakers distributed through the auditorium so that definite directional and third dimensional sound-effects are possible. Allied to this are several experimental processes, such as Warner RCA "Vitasound," which make use of a control-track applied along the perforation-area of the film to switch on and off additional amplification and horns to give an increased volume-noise ratio from conventional recordings.

16mm. Sound

As already indicated, Hollywood's studios began to show increased interest in 16mm sound-films for test and other purposes. The use of direct-16mm. sound-films for commercial purposes continued to increase, and the technique involved progressed notably. Today's better-grade 16mm recording is very little, if any, behind average 35mm. recording as heard in the majority of the nation's theatres.

The commercial use of 16mm. synchronized sound-on-film recording was aided by the development of the Auricon Blimp and sound-drive for the Cine-Kodak Special, which is decidedly the most popular camera now available for 16mm. commercial filming.

A radically new 16mm sound-on-film projector, the "Movie-Mite," was introduced for both commercial and home use. Suitable for individual showings of sales films, as well as home and small-group showings, this little projector is simplified in the extreme, and reduced to unusual portability and low price.

Bell & Howell introduced for their Filmosound projectors an interesting oscillatory stabilizer, which greatly improves film-movement past the sound-scanning aperture and results in notable improvements in sound reproduction.

There seemed a considerable increase in the number of amateurs adding sound-recording to their picture making hobby. The majority used sound-on-disc, frequently with the Synchro-Sound synchronizing system, and a few pioneered the use of sound-on-film with the Auricon recorder. In this connection, too, it is interesting to note that the curtailment of non-essential uses of alummum, usually used as a base for acetate recording discs, brought forth the introduction of an improved type of cardboard-based acetate disc by RCA, and several types of glass-based discs by other manufacturers.

Projection

Several new 16mm. sound-on-film projectors appeared. Victor introduced an arc model for use in extremely large auditoriums and theatres, while Eastman brought out 5 new Sound Kodascopes for home, school and business use. For display purposes, the same firm brought out the "Repeater Kodascope," a modification of a standard model, fitted with trips which, when actuated by the passage of adjustable rubber clips on the film, automatically stop, rewind, and then project a reel of film.

In the 8mm. field, Keystone brought out an 8mm projector with the highest illuminating power thus far available—a 750-Watt globe. Bell & Howell also brought out an improved 8mm. model, designed to accept reels up to 400 feet in length. Eastman introduced an improved Kodascope known as the 8-33, in the moderate-price class. One firm in Hollywood also marketed an interesting continuous attachment for use with 8mm projectors for display purposes.

Still Photography

Most notable in the still field was the introduction, by Eastman, of their new deLuxe miniatures. One, the hand Ektra, was a 35mm. minicam of the magazine type, making use of interchangeable backs much as the Cine-Kodak Special uses interchangeable film-magazines. It also employs the inside-coated Kodak Ektar lens. The Kodak "Medalist" is the first American high-grade miniature-camera built for film larger than 35mm. This camera, using standard 2¼x3¼ rollfilm, embodies all the familiar minicam features, including synchronized rangefinder focusing, interlocked shutter and film transport, parallax-correcting finder, etc.

Another interesting development was the use of Infra-Red sensitive materials for making photoflash pictures by "black light." Developed in England for use during blackouts, the technique originally involved the use of special filters over the flashbulb or its reflector, but in this country the Wabash organization developed a special "blackout" flashbulb with a permanently-applied filter coloring, in some instances a coating applied over the glass, in others, a dye in the glass of the flashbulb itself.

The U. S. Army Air Force made public some of the details of its "quick photo" system by which observers in a reconnaissance plane can take, develop and print a photograph within a matter of ten or fifteen minutes.

Bell & Howell introduced their "Slide-Master" miniature slide-projector. Designed especially for use in large auditoriums, this is one of the first, if not actually the first minislide projector to make use of high-powered projection globes up to 1,000-Watt size, and forced ventilation as in standard cine practice.

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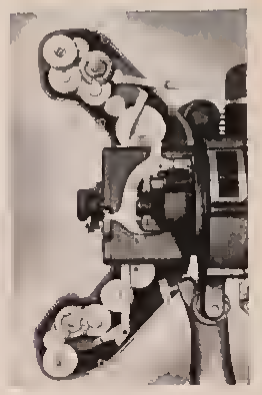

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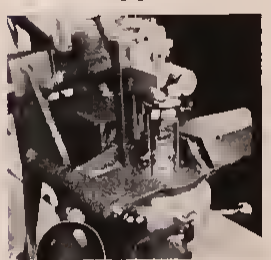

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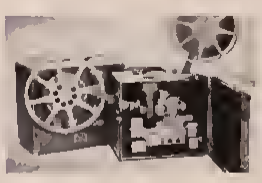

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